

# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

Volume 24

JULY, 1941

No. 7

## THE STATE ASSOCIATION\*

B. J. BRANTON, M.D.  
Willmar, Minnesota

THIS year will commemorate the four hundredth anniversary of the discovery of the Mississippi River by the Spanish Hernando De Soto in 1541. Can you imagine the astonishment and the amazement he must have expressed as he gazed upon the mighty stream that spread before him? He must have wondered where those turbulent waters came from. Little did he know that resting among lofty pines in the far north was a small lake as the source, or that the river which he discovered would have such a great share in the settling of this great north country. Could he have had visions of mighty steamboats plying these waters, carrying soldiers to subdue the aborigines, and settlers to form the nucleus of a future population of the finest type of American citizen?

Shortly after his discovery, we find the names of Hennepin, Duluth, Radisson, Le Sueur, Carver, Schoolcraft and many others, emblazoned on the history of our great Minnesota. They again had little thought as they explored the land and traded with the Indians that this Northwest territory would some day have a population of two and a half million people, to become noted for its lumber and milling industries, its iron mines and wheat fields, its dairy industry and vacation lands among the Sky Blue waters, its railroad systems and paved roads.

Little did Dr. Christopher Carli know that we would be celebrating today his coming in 1841 to the wilderness, distinguished as the first civilian physician to practice in this state. One hundred years have passed since then, filled with momentous events, wars and panics, depressions and inflations, an everlasting changing history of

momentous world events, but truly a century of advance unparalleled in history.

Turning the pages of medical history in the state, we find that eighty-eight years ago there gathered around a table a few medical men imbued with a spirit of mutual helpfulness who created out of their minds and meager financial resources, our state medical association, organized by them for the benefit, not of themselves alone, but for the people who they knew would need the best and only the best of medical care as the years came and passed. They left us a heritage which you and I should hold not only as a most dear birthright, but as an inspiration to promote still further that spirit of coöperation through which our association can ascend to greater heights. That friendly, brotherly, unified feeling engendering the Golden Rule which seems to have been lost sight of in many of our countries of the world today.

And then again, we must do homage to those men who through these years have builded great medical centers in the state, and the teachers in our state institutions of learning. We would not be twenty-six hundred or more strong in number on the roster of our association today if it had not been for their foresight and energy, their business sagacity and staunch citizenship.

This year I have followed a distinguished list of men who, as former presidents of the Association, for eighty-eight years have carried your torch of better health for all the people.

It has been my great pleasure, as your president, to become more intimately acquainted with the intricate workings of our Association. To anyone who doubts the importance of organization and organized medicine, a few days delving into the details and working of the association

\*Presidential address at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 27, 1941.

will soon have these doubts dissipated and find that the association, of which you and I are such an integral part, fills a place not only in the professional life of the state, but in the economic life of the people such as no other can.

Medicine is challenged by the people of this democracy to deliver at less cost better service to the populace, this service to be in great quantities available to all the people of every stratum of society, at any time. It is felt that we are selfish and obstinate in withholding this service and that we have a sinister motive in hiding behind the monopoly which the state has created by law in giving us the exclusive right and privilege to practice medicine.

I am glad to take up this challenge; it is easy to make clear that the medicine practiced today by our profession in the state of Minnesota and our United States is meeting every requirement made of it; that as practiced by us in Minnesota, it is economically sound and that the laws of the state with regard to who should have the right to practice the healing art are correct in continuing the patient-doctor relationship so dear to us who see only disaster to our people in state or socialized medicine.

To our beloved America, as well as to all the nations of the world, this is a time of confusion. Distrust is unrestrained among the nations and politically, economically, socially, as well as morally and intellectually, destructive forces are in motion. American democracy, a survival of one hundred and fifty years, is said to be a failure. Statesmen tell us the world is in a conflict of "the haves" and the "have nots." Misery and want are rampant over-seas. Starvation stalks those lands.

We must be concerned with the cure of this disease: "Dictator Self-Aggrandizement." What are the cures of this malady in this country?

It is fundamental that the most permanent economic system must be based on thrift and a reward to each individual in proportion to his energy outlay. Private business and industry will advance and afford a greater amount of employment, if they are permitted to function on safe economic principles with a fair wage for the worker and a fair profit for the employer.

The laws of nature control the physical well-being of the human body. Economic laws govern the surroundings of the body politic. The problem confronting civilized man everywhere is to

recognize economic changes and adapt himself to them, to make these changes work to the benefit of his fellow men and not for the dissipation of world economy.

Democracy will last only so long as we who believe in it continue to sacrifice something of self to the common good.

The physician has always felt that he should remain in obscurity in politics. He has believed that his was a sort of an ethereal state around which sordid political strife should pass. I tell you it is time we exerted our efforts in political economy in our state and nation. We have education, we are citizens, voters, taxpayers and dispensers of a necessary commodity in our several localities. Let us use our power and exert our influence to the betterment of human society.

If we are responsible, as medical men, for the health of the people, as citizens we are likewise responsible in part for the social welfare of these same people.

The paternalistic system of the relief program has certainly had its demoralizing effect on the moral fiber of the people. The dispensing of relief on too wide and liberal a basis such as prevailed two or three years ago was wrong in mode of procedure and certainly on too liberal a basis. I believe in decentralization in all civil governments as a true democratic principal, subdividing of school systems and their control from the state University down to the little red school house on the hill; local civil government from federal government through state, county and township divisions; and that relief, as such, should be dispensed first by township officers, then by county boards, next by state officials and the national government called on as infrequently as possible.

Democracy was builded on the principle of the people, by the people, and for the people. This must prevail or the specter of dictatorship looms large on our horizon.

The art of medicine dates back to 500 B.C. Born of the mystery of superstition, it has evolved into one of the most learned, if not the most learned, of professions. A true physician has the same qualifications as any ideal man in his relationship to his fellow associates. He must have "more regard for the rights of others than for his own feelings, and for the feelings of others than for his own rights."

The road to success in medicine is a wary one. To be a true American physician, a man or woman must have an inborn native ability, a desire and inspiration to be of use to his fellow man, an aptitude to meet people, and a determination to overcome all obstacles after prolonged study, training and experience. He must be able to meet failure and success with equal fortitude, always safe in the knowledge that the majority of people have confidence in him and his profession.

But to measure up to this confidence, he must practice with integrity. He must be tolerant to other members of his profession; if a specialist, he must be especially learned in the particular part of medicine he practices. Specialists, as well as general practitioners, must be continuously educated. Postgraduate education in any vocation is a necessity in modern life. It creates satisfaction because of increased skill and experience and makes for a pleasing personality because of happiness in work better and more easily accomplished.

The medical profession is under close scrutiny today by the people of our country. They have been told that medical practice has deteriorated, that people are not being taken care of, even dying without medical care, in spite of the fact that we have in this country, the lowest death rate, infant and maternal mortality, and the lowest tuberculosis mortality of any country on the face of the globe. As a consequence, the population is growing older, the average American being two and a half years older than in 1930 and six years older than in 1900.

It is a fact that the so-called indigent have more sickness and disease than the more well-to-do. This has always been true, being an economic, not a medical problem.

It is said that the average American family spends approximately \$60.00 a year for all types of medical and hospital care. This is a small amount when you know that two-thirds of the population are physically able to do hard work and dims into insignificance when we read that while the people of this country spend approximately four billion dollars a year for medical, hospital, nurses, drugs and dental care, that they spend for automobiles, gasoline and accessories, eight and a half billion dollars; for cigarettes and tobacco, two and a half billion dollars; for

amusements, four billion dollars; for beauty shops and cosmetics, one billion dollars and for liquor, two billion dollars.

If this system of free enterprise which we enjoy in this country is ever lost to us, with it will go the enjoyed freedom of the press, freedom of speech, the right of assembly and of trial of jury.

The recent Americal Medical Association trial in Washington is of interest to all practitioners of medicine, both old and young; in fact, to all persons, members of professional or trade organizations. If held valid, all such organizations exist in violation of the antitrust laws and are subject to the same penalties.

Recently the National Physicians' Committee has been formed, a committee having for its two major aims:

1. To make possible the provision of medical service to the indigent and low-income groups, and to assure the most wide-spread distribution of the most effective methods and equipment in medicine and surgery.
2. To assume the responsibility of countering destructive propaganda by familiarizing the public with facts in connection with the methods and achievements of American medicine.

Because of the wording and scope of the constitution and by-laws of the American Medical Association, it is impossible for it, or its component associations, such as ours, to take an active part in such a program. Therefore, the National Physicians' Committee, having for its trustees and organizers men of known integrity, high in the councils of the American Medical Association, surely merits our every confidence. Individual initiative and free enterprise being one of the fundamentals of a democracy, we should in every way support the right of each individual in society to pursue without fear, the satisfaction of his happiness and his wants as he wishes. I can recommend to our membership a conscientious study of the aims of this committee.

I want to commend to the membership, the work of the Cancer Committee with the Women's Field Army, the new enterprise in Meeker County of the Tuberculosis Committee with the Public Health Association; the Committee on Indigent Problems and the Advisory Committee to the Social Security Department. The newly formed Ethics Committee and their coöperation

## MEDICAL TESTIMONY—STONE

with the bar association is of prime importance in making future expert testimony before the courts more correct. The Committee on Child and Maternal Welfare, as well as the University Relationship Committee and their interest in University work and Continuation Center programs merit our support. The Radio Committee is getting good results in acquainting the public with medical problems. Our special thanks go to the Committee on Public Policy which has accomplished so much for us again this year. The members of this Committee have the well-merited admiration and confidence of the members of both houses in the legislature and our state officials at the Capitol.

It is with a deep sense of regret that I cannot mention each one of the committees of our Association. The chairman and members of each committee give so much of their time to us, give such conscientious concern to the matters presented to them, that it is no wonder to your officers that the work of the Association runs smoothly from year to year. Our appreciation to each one of them.

The Woman's Auxiliary of our Association does fill a great need by promoting interest in medical problems among the laity. They can be of a most definite use to our Association by laying out plans for the dissemination of medical knowledge through their contacts in various Women's Clubs, Parent-Teacher Associations, and similar lay groups. We need their support and help more at this time than in the past.

The State Hospital, Nursing, and Dental Associations are an integral part of the practice of medicine. Close harmony between us all is necessary to the carrying out of various programs of rehabilitation and the care of the sick. The problems of their associations are our problems. Much can be accomplished together; little if we are apart.

Hospital Service Associations such as we have in this state are highly to be commended and fill the need in that particular field. Prepaid medical service programs warrant careful and prolonged study before their adoption. To be successful, they must be state-wide and wholly under the guidance and control of medical men.

I would be dilatory if I did not mention the close harmony between the members of our association and the State Board of Health. This Department and its efficient staff have functioned one hundred per cent with us. This has, indeed, been a great source of pleasure to me personally, as it has to each one of you. It is very fortunate for the people of Minnesota that we have this close relationship.

Finally, unjust criticism of our profession by the public will be much lessened by three things: painstaking thorough work, a friendly tolerant attitude one to the other, and the assuming of a more understandable and common sense position towards all government departments, both state and national, whether military, civilian or welfare in character.

---

## MEDICAL TESTIMONY\*

ROYAL A. STONE

Associate Justice, Supreme Court of Minnesota  
Saint Paul, Minnesota

**D**ISCUSSION such as you want today should have at the outset its orientation, as correct and plain as may be. For this subject, that task is simple but highly important.

Courts are maintained for final and authoritative settlement of justiciable controversies, and the award and enforcement, if possible, of the appropriate remedy. In the process of decision, the first step is to ascertain truth; the next to

apply law to the truth as judicially determined. It is with that first and highly important step of truthfinding that we are now concerned. Therein, the testimony of the qualified and honest expert, medical or otherwise, may be indispensable to the correct, judicial result.

The issues, the questions for determination, are first settled by what we call the pleadings. In sum, they are but affirmation and negation. The affirmative has the burden of proof, that

\*Presented before the County Officers' Meeting, Saint Paul, Minnesota, February 22, 1941.



is, it must satisfy the fact-finder, jury, judge or commission, that it should prevail.

After issue joined by pleadings, comes the trial, at which the evidence, pro and con, is not only received but also tested by cross-examination and the argument of counsel. With the evidence of inanimate things, such as documents, we are not now concerned. Nor are we presently interested in the testimony of the ordinary witness which must go directly to the issue and ordinarily is confined to relevant facts within the orbit of his own observation and memory.

The present inquiry is confined not only to a special category of witnesses, but also to what we may term a subspecies of them. In many fields of inquiry courts resort to opinion evidence, sometimes even to that of laymen. But the larger part, and by far the most important, of opinion testimony comes from experts. They are so called, for convenience, because they are men of special, usually professional, training, experience and resultant skill in some field of endeavor and accomplishment not within the knowledge of the ordinary man.

The expert's opinion is received as an aid in or guide to judicial decision of questions of fact, the decision none the less judicial when made by a jury, which is an arm of the court. Received as an aid in the process of fact finding, the expert's opinion may be, and frequently is, controlling. So it is of prime importance, not only to the professions of medicine and law, but also to the whole public, which is damaged at a vital point in proportion as error and falsehood prevail over, or in any way obstruct, right and truth in the administration of justice.

At this point let me refer briefly to cross-examination. The ingenuity of man has devised no better way of testing the truth and honesty of spoken testimony—no more searching test of the soundness, both as basis and conclusion, of opinion evidence.

You need not repeat to me your complaints of the abuse of cross-examination by some lawyers. I know how well founded they are. Let me add at this point, as both diagnosis and prognosis, that the advocate who habitually abuses his right of cross-examination is on the way out.

The expert, if he deserves the name, is more than a match for the ordinary lawyer. I have seen more lawyers worsted by experts than I have the reverse. The sensible lawyer will treat

any honest expert witness with deference. What is more, and this you may not realize, many a lawyer has lost his case by what is called "brow beating" of an adverse witness. A principal error of inexperienced lawyers is what our profession terms "too much" cross-examination. For the advocate, one experience of that kind is ordinarily enough. He has learned his lesson.

Another influence is at work. Recently, for most of the United States, the legal profession has brought about two reforms. It has increased "prelegal education" so that now two years of college work (in some states an academic degree) is required as condition precedent to the study of law. Then come the three or four years in law school. In addition, law examiners have elevated their standards in the same proportion. More than ever, candidates for admission to the bar are investigated as to their moral character. The result is that we, who sit as judges, now see a marked betterment, not only in the ethical standards of lawyers, but also in their professional technique. Excessive and improper cross-examination of witnesses is therefore on the wane, because, when it is not unethical, it is foolish.

During my eighteen years on the court of last resort of Minnesota we have disbarred nearly 100 lawyers. The beneficial result for the rest of the profession, and for those with whom it deals as witnesses and otherwise, is apparent. A significant thing about these disciplinary cases is that, so far as I now recollect, not one of the unfortunate attorneys had the benefit of a college education. The legal profession, like that of medicine, insists upon having as much as practicable of education, not alone for its result in knowledge and skill, but also for its manifest contribution to the building of real character.

If my knowledge of the attitude of doctors toward courts and lawyers is correct, your next bone of contention with us is the hypothetical question. Here again, I know generally what your criticism is, and I admit freely that it has much basis in fact. In the law an effort is being made not so much to do away with the hypothetical question as to prevent its abuse. For instance, the proposal has been made, and in some cases it has been tried, of requiring all hypothetical questions to be submitted in writing to opposing counsel and the court, before being propounded to the witness.

I do not like that idea. It would have too much of a tendency to delay the trial. Moreover, cross-examination of an evasive or untruthful witness is frequently unsuccessful if it is too slow. All trial lawyers know the danger of giving such a witness too much time in which to consider what his answer should be, in order, not to tell the truth, but deliberately to falsify.

In my judgment, the evils of the hypothetical question, and I confess their presence, may be removed by the entirely adequate control which the trial judge has of the conduct of a trial. It is his duty to keep counsel within their proper limits and protect witnesses, whether expert or nonexpert.

Both as to cross-examination and hypothetical questions, the expert is not at the mercy of an unscrupulous advocate. He has a perfect right to insist, and state his reasons for doing so, either that a question is improper or futile, or that the hypothetical question, from the scientific standpoint, is wholly beside the mark and not susceptible of intelligent answer.

Let the expert remember that he is being examined in his own special field; let him remember that by becoming a witness he has not lost the right of reasonable self-assertion, and that he, rather than the lawyer, should be the author of his testimony; let him remember that he is being asked for his own opinions, and therefore has a right to assert them, as such, without too much attempted dictation from counsel, and he will have solved many of the difficulties which otherwise may confront him on the witness stand.

In short, stand on your own professional and personal rights. Do not submit to unfair treatment by advocates. If you are too much badgered by such things as demands for "yes" or "no," when both are either impossible or misleading, it will be due to your own lack of proper self-assertion.

Effort has been made to do away with abuses of the hypothetical question. It has gained some headway. Expert opinion is after all opinion. The court's duty is to find the facts. So it must know the factual basis for all opinion testimony, especially where, as is too often the case, opinions of experts are irreconcilably opposed.

It frequently happens that an opinion of a perfectly honest and highly skilled expert is based on error of fact for which he may or may not be responsible. Where the cross-examiner is pre-

pared later in the trial to show such error, it is entirely proper to ask for the opinion of the witness on the postulate that the fact is other than he has taken it to be.

You may be interested in knowing that the National Conference of Commissioners on Uniform State Laws (the Conference is somewhat of a subsidiary of the American Bar Association but its members in most of the states enjoy a quasi-official status) in 1937 adopted and recommended to the state legislatures a "Uniform Expert Testimony Act." Time does not permit an examination in detail of its plan. Here is the gist of it as stated by its authors:

"This Act authorizes the court to select and summon expert witnesses; it provides for conferences and joint reports of these witnesses, for their personal examination of the subject-matter of the controversy, and for the removal of the objectionable features of the hypothetical question."

When and if the Minnesota Medical Association desires to have some such plan recommended for adoption by the Legislature, you will find the State Bar Association ready to cooperate. The Bar alone, as things stand now, might sponsor, but it could not insure success for, such an effort at reform.

There is another feature which cannot be too much stressed. It is one in which I fear medical witnesses have been much at fault. But the fault is probably as much due to the ineptitude of lawyers as to any conscious error by doctors.

Decisions are made not alone on direct evidence—they are reached in most cases by what logic calls the process of inference or deduction from known facts. They should never be made by that very different and inferior mental process of guess or conjecture. Therefore, the expert's opinion should be strictly, studiously, conscientiously confined to what he can say on oath is his logical inference or deduction, rather than his mere speculation or conjecture. His opinion, in order to be confined to its proper function as aid or control of decision, must be confined to what he can say is sure or reasonably probable, rather than to what is only speculative or possible. Of course, if he is asked to speculate, or deal in mere possibility, he may do so.

An extreme example of fanciful theory as substitute for logical inference is the case of the witches (6 How St. Tr. 647, 698) tried in 1665.

There a physician, in substance, testified that, in his opinion, the accused were witches, because, forsooth, the fits to which they were subject permitted no other diagnosis.

So far as I know, no profession has a more accurate and scientifically satisfactory terminology than that of medicine. I have long envied you its possession and use. We of the law can boast no such accomplishment. Our terminology is unavoidably unscientific and loose. One of the objectives of the American Law Institute has been to better that situation so far as possible.

But the excellence, for its purpose, of your terminology does not justify the use you make of it on the witness stand. Too many of you fail to remember that you are not talking to your own professional associates, but that, instead, you are speaking to laymen, who understand few, if any, of your scientific, medical terms. If, therefore, your testimony is left in the terminology of your profession, without a translation which the layman can understand, your whole effort as a witness will be confusing if not futile.

Here is an illustration of an admirable piece of work by one of your profession, taken from a recent record before the Supreme Court: The doctor was asked for his diagnosis. His reply was, "A family ataxia in all probabilities of the Fredreich's type." He immediately explained, "Ataxia means uncertainty in one's gait or uncertainty in one's equilibrium, lack of balance."

If the medical expert, wherever possible, will confine himself to language which the layman can understand, or if he must use his own scientific terminology, if he will immediately make the best translation of it he can for judge and jury, he will be bettering the status of the medical expert witness and enhancing greatly the value of his testimony.

By way of general observation, may I respectfully suggest, for the attending or examining physician who may become a witness, the need for complete and accurate case records. The witness with a contemporaneous record to help his memory may speak with a cogency that would be lacking in the absence of any history or if it were incomplete.

Personally, I have been somewhat surprised by the extent to which doctors leave the making of hospital records to nurses. Thereby it seems

to me the history is too much opened to error, especially of omission. As evidence, the chart will have probative value largely in proportion as it speaks for doctor rather than nurse. The suggestion is not that you should do the writing but only that, as a matter of self-interest, the record is important to you. It is apt to be highly so if fate ever unfairly casts you for the part of defendant in a malpractice suit.

Now for a feature which more or less characterizes all expert testimony. Concerning it a former chief justice of the United States once said: "My own experience, both in the local courts and in the Supreme court of the United States, is that, whenever the matter in contest involves an immense sum in value, and where the question turns mainly upon the opinion of experts, there is no difficulty in introducing any amount of them on either side."

We of bench and bar recognize the large area of medical consideration and inquiry in which there is room for reasonable difference of opinion. We would not be frank with you, however, if we did not say, unequivocally, that cases are all too frequently being presented to the courts wherein medical experts disagree concerning a matter as to which, in our technically uninformed opinion, they should be in agreement. In other words, we feel and cannot be blamed for doing so, that on one side there is either wilfully false testimony, or the opinion is that of an incompetent witness.

This is a pathological condition of medical jurisprudence for which bench and bar have no efficient therapy. We can't even make a diagnosis, to say nothing of prescribing. Remedies we have in the penalties for perjury and its subordination. But they are difficult of application at the best—impossible of it without your interested, systematic and active coöperation.

When doctors disagree as witnesses we know usually that both views are sincere—that there is room for reasonable difference of opinion. But, in some cases, we suspect that on the one side or the other there is wilful untruth or just plain incompetency. Here is an actual case. Two, if not three specially qualified and experienced roentgenologists, testify that a plate in evidence shows no skull fracture. One general practitioner, one only, with no training and slight experience in their specialty, opposes them. He says there is plain evidence of fracture. The jury

believes him, rejecting the only testimony which probably all of you would consider competent.

This is the sort of thing that explains such comment as this, coming not from a lawyer but from one of your own profession: "At present expert medical testimony is in a deplorable state."<sup>\*</sup>

No judge is qualified even to investigate such a situation. However much he might investigate, he would yet lack the personal qualifications requisite for correct decision. The problem is one susceptible of competent investigation and decision only by doctors. Furthermore, the remedy, wholly adequate, is in their hands. Where deserved by the incompetent or untruthful medical witness, a professional disciplinary proceeding cannot be bettered as both punishment for the offender and deterrent for others.

The bench and bar of Minnesota are grateful to the Minnesota State Medical Association for being, so far as we know, the first to take constructive steps in devising a needed therapy for this recognized evil. You have set up a standing committee to which any judge may refer the record of any medical testimony which he, rightly or wrongly, suspects of being the result of incompetence or falsehood. But, there again, it is respectfully submitted, the initiative must not be left to lawyer or judge. Unless doctors take over the whole matter the effort will be futile. That is because lawyer and judge will be slow to the point of timidity in even suggesting that the testimony of a doctor should be subjected to investigation by his own colleagues.

The doctor called as a witness becomes, pro tempore, a medical jurisconsult. That function should rule out all bias and tendency to partisanship. The task of freeing medical testimony from all such improper factors and influence is yours.

If, on the witness stand, a doctor violates the standards of his own profession, some other doctor is sure to know of it. On the latter, rests the initial responsibility for activating the professional attention deserved by the misconduct. In proportion as that responsibility is not promptly met and properly discharged, the fault will be that of doctors rather than lawyers.

<sup>†</sup>Jour. A.M.A., 116:209, 1941.

You, of the Minnesota State Medical Association, have the credit of being the first to meet the issue professionally, constructively and practically. The eyes of the whole American Bar, and particularly of all state judicial councils, soon will be, if they are not now, watching your experiment. You are in sole charge of it. We mere lawyers must simply stand by ready to render such aid as may be possible.

This is an appropriate point at which to remind you that our state and local bar associations have their ethics committees. If any of you have a complaint against any lawyer they will hear it and take the appropriate action, which will be disciplinary if the facts so require.

Honored as any lawyer would be by your favor on such an occasion as this, I must guard against possible thought that I came here to speak in criticism or disparagement. What has been said has been uttered in conscientious response to what I considered your desire. To the extent that my language approaches that of criticism, it has to do with an evil which you formally recognize and concerning which you have as formally determined to do something.

For the accomplishments of doctors of medicine, for their integration and loyalty to high ideals, we of bench and bar have the highest admiration. "Many a time and oft," it is expressed in terms of unfeigned envy. In my own person, there is the debt, thrice repeated, of life itself. Had it not been for the devotion and skill of certain members of your profession, you would not now be required, by the error of your program committee and your own courtesy, even to appear to be listening to me, respectfully or even wakefully. If it has been an ordeal, take it out on them.

But let me warn you—one of them was a frontier family physician of the "horse and buggy" days long since gone to his reward.\* So fine a character was he professionally and personally, so saintly was his whole life, that in the hereafter, if it be justly departmentalized in respect to reward and punishment, some of us may find it impossible to locate him.

\*Inquiry has developed that the subject of this tribute was the late Dr. H. L. Hubbard, a pioneer physician of Morris, Minn.



## RELATIONSHIP OF THE VOLUNTARY HOSPITAL SERVICE PLANS TO MEDICAL PRACTICE\*

PETER D. WARD, M.D.

Saint Paul, Minnesota

**I**N the beginning . . . the medical profession looked upon the infant Hospital Service Plan with a rather skeptical eye. . . .

Which reminds one of the story of the ambitious young lady who yearned to forsake the abode of her childhood and venture forth to claim her rightful place in the affairs of the world. Her parents remonstrated profusely, but to no avail. Then as a final stroke the father informed his determined daughter that she need not darken the door of her home again. . . . Time marched on, and in less than ten years the daughter had become a famous actress, and the proud parents "basked in reflected glory"—completely forgetting their violent opposition to her ambition.

Today, an attitude of interest and coöperation prevails on the part of the medical profession. In confirmation, your attention is called to the fact that on December 15, 1940, the Minnesota State Medical Association formally approved the Minnesota Plan after seven and one-half years of successful operation. Further recognition was evident by the physicians' sponsorship of the Regulatory Act recently enacted by the Minnesota State Legislature—all of which indicates that skepticism has given way to a recognition of the physician's rightful place in such a community health program. It is believed that the fine relationship between the medical profession and the Voluntary Hospital Service Plans which has been established in this state, will eventually develop throughout the country.

The rôle of the practicing physician in the Voluntary Hospital Service program is one of primary importance. In fact, he might be considered the "man at the controls" between the subscriber as the recipient, and the Plan as the distributor of benefits through the hospital. Therefore, it is obvious that a thorough knowledge and understanding of the Plan on the part of the physician is necessary if it is to operate successfully and maintain the benefits for the subscriber. On the one hand, each subscriber

has a right to expect the fulfillment of the provisions of the contract that he has purchased; while on the other, the Plan must be protected from an abuse of its benefits offered in good faith.

The physician, the hospital and the Plan, operate as an interdependent unit; in the hands of the physician rests the responsibility for hospitalization of the patient; the hospital is expected to render the necessary services required by the patient; and the Hospital Service Plan reimburses the hospital for the cost of this service as guaranteed by the subscriber's contract. Thus it can be realized how important it is for these three to operate harmoniously for the good of the whole.

Maximum subscriber benefits from Voluntary Hospital Service Plans can be realized only when this inter-relationship is founded upon mutual confidence, understanding and coöperation; and such a relationship is not only desirable, but paramount for the continued existence and expansion of the Plans.

Voluntary Hospital Service Plan policies should be based upon the needs, desires and facilities of the particular community which they serve. The medical profession is a valuable source for obtaining this necessary information, and should have representation on the policy-making or governing body of the organization. Their professional experience and knowledge of local community conditions can be utilized effectively in formulating mutually satisfactory policies.

This active participation of physicians in the community opens the way to efficient and co-operative action, for as the physician's understanding of the Plan and its workings increases, he can better explain its benefits to his patients. This is of primary importance to the Plan, for this professional approach insures good will through the satisfactory adjustment of differences of opinion, which might otherwise develop into controversies.

The establishment of a Medical Relations, or Medical Advisory Committee can be of additional

\*Presented at the Sectional Meeting of the American College of Surgeons, Minneapolis, March 10, 11, 12, 1941.

value to the Voluntary Hospital Service Plan. The exercising of the right of arbitration by such a committee is desirable in settling differences of opinion and claims that might arise among the subscriber, the Plan, the hospital and the physician—and particularly those problems related to medical matters. Some Plans maintain a medical department for this purpose.

Under the Voluntary Hospital Service Plan the physician's prerogatives are not disturbed in that he has complete freedom in the treatment of the patient; likewise, the patient has a free choice of physician. The Plans have always zealously and effectively guarded this freedom.

At this point it might be well to mention a few of the advantages enjoyed by the physicians as a result of this Voluntary Hospital Service program. It has been responsible for retaining as private patients for the physician, a large group of people who were previously medically indigent. Further, it has alleviated a great deal of the difficulty formerly experienced with the patient who needs hospitalization, but who could not assume the expense involved. Thus a large number of subscribers of the low income group, who would be deprived of adequate care in numerous instances, or be obliged to become indigent patients in charity hospitals, are provided the opportunity to remain self-supporting in this respect. It should not be overlooked that such a situation has a definitely elevating effect on the general morale of a community, and it is my contention that the majority of people are desirous of paying their own way—thereby exercising freedom in the choice of a physician and a hospital.

Further, it is believed that with such a program, whereby a large number of people are given an opportunity to systematically save for hospital care on a community basis, the threat of compulsory health insurance, with all its hazards and bewildering administrative complexities, all its bureaucratic defects and its inevitable excessive costs, can be indefinitely postponed.

In reciprocation of the Plan's endeavor to protect the rights of the physician, and make it possible for him to receive these advantages, the Plans expect the physician to assume the responsibility that is rightfully his—that is, to protect the Plans from abuse of its benefits. A few of the ways in which this protection may be exercised are as follows:

1. To hospitalize a subscriber only when the condition warrants.
2. To hospitalize a subscriber only for the number of days necessary.
3. To avoid hospitalization for rest, prolonged convalescence, et cetera.

A few rather presumptuous examples of the exploitation of these services offered in good faith might be cited as follows:

1. Patient "X" being hospitalized nine days for a fracture of the distal phalanx of the second toe.
2. Doctor "X" hospitalizing all obstetrical patients fourteen days when the average for non-subscribers is ten days.
3. Subscribers hospitalized from three to four days for tonsillectomies, when the average for non-subscribers is from one to two days.
4. Before the inauguration of the Voluntary Hospital Service Plan the average stay for appendectomies was ten days; afterwards, eleven days.

The citation of experience of the Minnesota Hospital Service Plan for the year 1940 will clearly indicate the extent of the physician's responsibility. During the year 1940 the Minnesota Plan paid hospitals \$1,308,380, for 42,534 subscribers, who were hospitalized for 302,492 days. If these 42,534 subscribers had been hospitalized for one more day, the additional cost to the Plan would have been about \$180,000, which means that the reserves for 1940 would have been wiped out, leaving a deficit of approximately \$50,000. The inevitable result would be that either the rates to the subscriber would have to be increased, or the benefits decreased—thus defeating the primary purpose for which the Plan was originally organized.

This experience clearly indicates the great importance of the rôle of the practicing physician in this Voluntary Hospital Service movement. The physician who fully appreciates and accepts this responsibility, contributes a great service to the success of this health program by exercising his controlling influence to discourage the tendency of some subscribers to take advantage, unnecessarily, of the Plan's benefits.

Briefly, the solution of this serious problem which confronts the Voluntary Hospital Service Plan, lies in the development of a mutual un-

## MENINGIOMAS OF THE SPINAL CORD—BUCHSTEIN

derstanding among Plan executives, physicians, the public, and hospital administrators—particularly for physicians and the public. Such an educational program may be conducted through the medium of letters, bulletins, booklets, personal discussions and group meetings. A reference manual clearly describing the provisions of the subscriber's contract, is a valuable guide to the physician. This manual should be brief, interesting, and to the point—thus encouraging reading.

Because of the direct benefits to the hospital,

it may appear inconsistent for a hospital administrator to be advocating a decrease in hospital utilization. However, in order to protect the benefits to the subscriber, we as hospital people must take a less selfish attitude, and think in terms of the greatest good we can do for the greatest number of people.

### References

1. Goldwater, S. S.: New York City has a plan—for low cost ward service. *Modern Hosp.*, 56:67-68 (April) 1941.
2. Minnesota Hospital Service Association.
3. Report of Committee on Hospital & Medical Relations of the Commission of Hospital Service Plans of the American Hospital Association.

## MENINGIOMAS OF THE SPINAL CORD\*

HAROLD F. BUCHSTEIN, M.D.

Minneapolis, Minnesota

SPINAL cord tumors are relatively favorable lesions for surgical treatment. They produce a train of symptoms and signs which, together with various laboratory aids at our disposal, permit their diagnosis and localization with a high degree of accuracy. More important, however, is the fact that most spinal cord tumors are solitary, benign lesions which lend themselves to surgical extirpation.

Benign tumors of the spinal cord are made up largely of two histologic types, *meningiomas*, which arise from the spinal meninges and lie intradurally, and *neurofibromas*, which arise from the sheaths of the spinal nerves and may be intradural, extradural or both. Together they comprise over one-half of all intraspinal neoplasms. In most of the reported series of cases the meningiomas have outnumbered the neurofibromas but in the series of 557 cases studied by Rasmussen, Kernohan and Adson the neurofibromas comprised 29 per cent of the entire series while the meningiomas accounted for 25 per cent. During the past year I have operated upon nine patients with intraspinal neoplasms, of whom four proved to have meningiomas.

The literature contains few communications devoted specifically to meningiomas of the spinal cord. The paper of Learmonth and the mono-

graph of Cushing and Eisenhardt are the most comprehensive of the available reports.

### Pathology

The term meningioma was proposed by Cushing to designate tumors taking their origin from the cranial and spinal meninges. These tumors are presumed to develop from embryonic rests of meningeoblastic cells which are seen most frequently in the vicinity of the arachnoid villi but which occur elsewhere in the leptomeninges and in the dura. Conflicting views regarding the histogenesis of the meninges and the tissue structure of these tumors have led to their being known by many names, among them dural sarcoma, fibroma, endothelioma, meningeal fibroblastoma, and neuro-epithelioma. Until these arguments have been finally resolved, Cushing's term is preferable since it is at once simple, descriptive and noncommittal on debated points.

Intraspinal meningiomas are similar in both gross and microscopic structure to those occurring intracranially. The typical intraspinal meningioma is a discrete, encapsulated tumor having a roughly spherical or ovoid shape. It may arise from the leptomeninges but usually has an attachment to the inner surface of the dura. This area of dural attachment tends to be small in relation to the size of the tumor and to be in the vicinity of a nerve root, a site where there are found structures quite analogous to the

\*From the Division of Neurosurgery, Department of Surgery, University of Minnesota Medical School and the University Hospitals. Presented before the Minnesota Society of Neurology and Psychiatry, December 9, 1940.

arachnoid villi and cell rests of the cranial meninges. The blood supply of the tumor commonly enters through the dural attachment. More rarely intraspinal meningiomas assume a broad, flat shape with an extensive area of dural attachment. Meningiomas displace and compress the spinal cord and its nerve roots, often to a remarkable degree, but do not invade them. The tumors are soft or firm in consistency and may contain loculations of yellow fluid. A deposit of calcium is common in these tumors, particularly in those of long standing. Spinal meningiomas only seldom penetrate the dura and apparently never arise extradurally. They differ from intracranial meningiomas in that they never involve the bone with the production of hyperostoses.

Although the gross appearance of intraspinal meningiomas is not unlike that of neurofibromas, they may be readily distinguished by the fact that the latter arise within a spinal nerve or nerve root, whereas the meningiomas may displace the spinal nerve roots but do not invade them.

Histologically meningiomas present a variety of forms. They may be predominantly cellular, with or without whorl formation, fibroblastic, osteoblastic or angioblastic. Detailed classifications have been proposed by Bailey and Bucy, Globus, and Cushing and Eisenhardt. Most meningiomas are slowly growing and benign, and if completely removed do not recur. Certain forms, however, particularly those of a mesenchymal or angioblastic nature, grow rapidly and may recur soon after seemingly complete removal.

Some authors have broadened the concept of meningioma to include all tumors of the central nervous system whose cell type forms a constituent of the normal meninges. This inclusion of sarcomas, melanomas and lipomas among the meningiomas may be defensible on pathologic grounds but is confusing if carried over into clinical discussions.

### Clinical Features

Intraspinal meningiomas occur more commonly in women, the proportion varying from 66 per cent to over 80 per cent in reported series of cases. They are predominantly a tumor of adult life, 90 per cent of Learmonth's patients being over thirty years old, and 80 per cent of Elsberg's over forty. Among Ford's series of

twenty-one cases of intraspinal tumor in children only one was a meningioma.

Meningiomas occur at all levels of the spinal cord but are rarely found in the region of the cauda equina, a circumstance for which there is no ready explanation. In terms of the vertebral column the distribution of meningiomas in Rasmussen's series was: cervical spine, 16.5 per cent; thoracic spine, 82 per cent; lumbar spine, 1.5 per cent.

The majority of meningiomas of the spinal cord produce symptoms for one to two years before being diagnosed and removed, but considerably longer histories are by no means unusual. The symptoms may be gradual or dramatic in their onset, but once present tend to progress unrelentingly. The symptoms, and their concomitant neurologic signs, are in no sense specific for meningiomas but are those common to all spinal cord tumors. They consist in brief of two elements, either of which may predominate but both of which are usually present.

1. Pain due to irritation of nerve roots by the tumor. This radicular or root pain is characteristically initiated or aggravated by actions which raise the pressure in the spinal epidural space (coughing, sneezing, straining) and jarring. The pain often comes on during recumbency and may be relieved by resumption of the erect posture.

2. Sensory, motor and sphincter paralysis resulting from compression of the spinal cord by the tumor. This, if unchecked, progresses finally to the point of complete paraplegia. Either motor or sensory symptoms may be the first to appear and either may dominate the clinical picture. A variety of syndromes may be produced including some which closely simulate systemic and degenerative disorders of the spinal cord, such as primary lateral sclerosis, subacute combined degeneration and multiple sclerosis.

By the time a lumbar puncture is performed, in most cases manometric studies will demonstrate a complete block of the spinal subarachnoid space (positive Queckenstedt test) and the fluid obtained will contain a moderately increased quantity of protein, often being xanthochromic.

By contrast, neurofibromas of the spinal cord typically occur in men, and have no predilection for any age group. They tend to have produced symptoms for less than one year or more than two. The neurologic examination usually indi-



cates a lesion in the cervical or lumbar regions of the spine. Their first symptom is usually unilateral root pain or other sensory disturbance of segmental distribution. A block of the spinal subarachnoid space is present and the fluid obtained by lumbar puncture contains a considerably increased quantity of protein (more than 250 mgm. per 100 c.c.).

Equally as important as the diagnosis of the presence of a spinal cord tumor is its exact localization. The level of sensory loss which may be determined by neurologic examination is a treacherous guide to the site of the tumor and should not be relied upon as the sole localizing sign. It not infrequently is several or many segments below the level of the lesion, and in any event it indicates the spinal cord level, which does not correspond to the vertebral level except in the upper cervical region. The sensory level has been noted to rise perceptibly after performance of a spinal puncture which presumably allowed the tumor to shift its position and wedge itself more tightly into the vertebral canal.

Radiographic study of the spine has less diagnostic and localizing value for meningiomas than for many other sorts of spinal cord tumor. Whereas 30 per cent of all spinal cord tumors will produce some bony changes, only 10 per cent of meningiomas do so, as compared with 45 per cent of neurofibromas. The changes most commonly seen are erosion of the vertebral pedicles and widening of the vertebral canal at the level of the tumor. Occasionally the meningioma itself may be visualized by virtue of the calcium deposited in it, as was the case in two of forty-three cases studied by Camp.

Accurate localization of most meningiomas will require some form of radiographic visualization of the spinal subarachnoid space (myelography). The most familiar method of doing this is by the introduction of radiopaque substance (lipiodol) into the spinal subarachnoid space with subsequent fluoroscopic and radiographic observation. Such a study not only locates the meningioma but usually will indicate its intradural and extramedullary character as well.

In the event that the tumor is completely obstructing the spinal subarachnoid space a simpler expedient is available in the form of air myelography. A quantity of the cerebrospinal fluid below the level of the tumor is removed and replaced with air. The patient is then placed in the

upright position and x-rays of the spine are made. These will show the air trapped in the spinal subarachnoid space just below the tumor, outlining its lower border.

### Report of Cases

Some of the clinical syndromes which may be produced by intraspinal meningiomas are illustrated by the following case reports. For the sake of brevity and clarity only these historical facts and laboratory data which were pertinent to the diagnosis of the spinal cord tumor will be recorded here; in each instance a complete study, both medical and neurological, was carried out. The pathological studies in each case were made by Dr. A. B. Baker, of the Division of Nervous and Mental Diseases.

*Case 1.*—A fifty-six-year-old woman had complained for two years of sharp stabbing pains in her lower back and along the lateral aspects of both thighs. The attacks of pain were brought on by coughing, sneezing, and stooping over. She was forced to sleep in a semi-reclining posture because of the severe pains which came on if she lay flat in bed. For several months both lower extremities had been subjectively numb and during the month preceding admission her legs had become so weak that she was no longer able to stand or walk.

The patient weighed 250 pounds and had a mild arterial hypertension. The abdominal reflexes were absent, as were the deep reflexes in both lower extremities. The Babinski reactions were bilaterally positive. An area of cutaneous hypoesthesia was present involving the "saddle area" on the right and the distal two thirds of the right lower extremity; the corresponding areas on the left seemed by comparison hypersensitive.

No evidence of tumor was seen in x-rays of the spine. A complete block of the spinal subarachnoid space was found upon lumbar puncture. The cerebrospinal fluid was clear but contained an increased quantity of protein (170 mgm. per cent). Subsequent air myelography outlined the lower border of the tumor at the level of the eleventh thoracic vertebral body.

The removal of two pair of vertebral laminae sufficed to expose the tumor, which was attached to the left anterolateral aspect of the dura, displacing the spinal cord posteriorly and to the right. It was soft and friable, defeating any attempt to roll it out from beneath the cord. The greater part of the tumor was therefore removed by suction, following which the base of the tumor and the area of dura to which it was attached were removed. The tumor was of a cellular type with whorl formation (psammoma).

The patient was about to be dismissed from the hospital in the third postoperative week when she devel-

## MENINGIOMAS OF THE SPINAL CORD—BUCHSTEIN

oped a bilateral bronchopneumonia with pleural effusion. These were treated with sulfathiazol, oxygen and repeated thoracenteses. She was finally dismissed two months after operation, at which time the

Removal of the spines and laminae of the eleventh and twelfth thoracic vertebrae permitted the removal, in one piece, of a meningioma which was attached to the anterolateral portion of the dura and had dis-

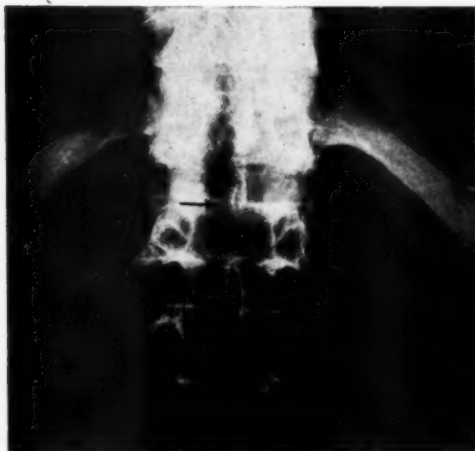


Fig. 1. Case 2. Air myelogram outlining meningioma of spinal cord.



Fig. 2. Case 3. Radiogram of thoracic spine, showing calcified meningioma within vertebral canal. On right, a radiogram of the tumor after its removal.

deep reflexes and some motor power had returned to her lower extremities.

*Case 2.*—A thirty-five-year-old farmer had for two years noted numbness of his lower extremities, beginning in the feet and gradually ascending to the hips. During the past year his lower extremities had become so weak that he required support in order to get about. Although pain was a minor complaint there had been some low back pain which upon coughing or jarring would radiate about his trunk in girdle fashion, just below the level of the umbilicus. Bladder and rectal sensation were lost.

The deep reflexes were hyperactive in both lower extremities and the Babinski reactions were positive. The right calf muscles were moderately atrophied and some fibrillary twitchings were noted in the left thigh muscles. Position and vibratory sense were completely absent in both lower extremities and all forms of superficial sensation were reduced in the saddle area and in the distal portions of the lower extremities.

Lumbar puncture disclosed a complete block of the spinal subarachnoid space; the cerebrospinal fluid obtained was yellow and contained 170 mgm. per cent of protein and one cell per cubic mm. On x-rays of the spine a questionable erosion of the pedicles of the twelfth thoracic vertebra was noted. This finding was confirmed by air myelography which demonstrated a circumscribed intradural mass whose lower border lay opposite the lower border of the twelfth thoracic vertebra (Fig. 1).

placed the cord posteriorly and to the right. The tumor weighed five grams and was of meningotheomatous type.

The patient was discharged from the hospital on the fourteenth postoperative day, at which time he had regained much of the lost motor and sensory function of his lower extremities.

*Comment.*—These two cases are examples of typical meningiomas of the spinal cord, if one may speak of such a thing. The two tumors were strikingly similar in level and location, yet one patient had complained chiefly of pain until shortly before her admission, while to the other patient pain had been a minor complaint. The pain in each instance, however, was characteristic of that produced by spinal cord tumors. The first patient had been unable to sleep lying flat in bed because of the severe root pains which came on several hours after lying down. The occurrence of such pain, and its relief by resuming the erect position, is perhaps the most characteristic single symptom of spinal cord tumors.

*Case 3.*—Seven years before coming to the hospital this sixty-four-year-old woman had noted the gradual onset of unsteadiness in gait and a tendency to fall, especially while walking on rough surfaces. Finally

she was unable to walk unless she watched her feet. During the year prior to admission bladder incontinence and obstipation had appeared. At no time did she complain of pain.

The abdominal reflexes were absent and the deep reflexes were hyperactive in both lower extremities, the Babinski reaction being positive bilaterally. Posterior column function, as measured by position and vibratory sense, was practically absent in the lower extremities and it was the resulting incoordination rather than actual weakness, which rendered the patient's lower extremities virtually useless. Superficial sensation was reduced below a level corresponding to the twelfth thoracic dermatome.

Upon lumbar puncture the Queckenstedt test showed an incomplete block of the spinal subarachnoid space. Bilateral jugular compression caused the cerebrospinal fluid pressure to rise from 4 to 20 mm. of mercury, but it did not fall again upon release of the jugular compression. The fluid contained a normal quantity of protein and 1 cell per cubic mm. The Wassermann reaction was negative.

Radiograms of the thoracic spine demonstrated a calcified tumor lying in the vertebral canal opposite the body of the seventh thoracic vertebra (Fig. 2). This was found to be a calcified meningioma, a firm white tumor attached to the left anterolateral aspect of the dura, displacing the spinal cord posteriorly and to the right. It was rolled out from its position beneath the cord and removed in one piece, together with the area of dura to which it was attached. The tumor was a psammoma with an unusually heavy deposition of calcium.

The patient was making satisfactory convalescence, some return of function in her lower extremities having been noted, when she died suddenly on the tenth postoperative day. Autopsy showed a pulmonary embolus to have been the cause of death.

*Comment.*—This case presents striking contrasts to the more typical cases first reported, and these differences may be attributed to the very slow growth of the tumor. Most dramatic, of course, is the marked calcification of the tumor, permitting the diagnosis and localization to be made by simple radiographic study of the spine. No better example of the potential value of radiographic study in cases of suspected tumor of the spinal cord could be provided.

The fact that this patient had symptoms for seven years before a correct diagnosis was made was probably due to the absence of any pain and to the domination of the clinical symptoms and signs by evidences of posterior and lateral column dysfunction. This case well illustrates the danger of making a diagnosis of systemic or degenerative disorder of the spinal cord, except in perfectly typical cases, without first ex-

cluding the presence of a slowly growing spinal cord tumor. The absence of pain, it may be noted, is not a unique circumstance, for pain was not mentioned as a complaint by 10 per cent of the patients in Learmonth's series of meningiomas of the spinal cord.

The absence of a complete block of the spinal subarachnoid space and the presence of normal cerebrospinal fluid in this case are likewise worthy of comment. The significance of partial blocking of the subarachnoid space, as demonstrated by a slow rise and slower fall in the fluid level upon performance of the Queckenstedt test, is still not generally appreciated although it has been frequently commented upon in the literature. If some quantitative method of measuring blocking of the spinal subarachnoid space, such as that proposed by Grant and Cone, were routinely employed it is probable that a number of spinal cord tumors might be detected early in the course of their growth.

*Case 4.*—Eleven months before coming to the University Hospital this thirty-six-year-old woman fell down a flight of stairs and thereafter complained for the first time of low back pain. Two weeks later, while lifting a heavy tub, she felt "something snap" in her back. After this the pain shifted into the right sacro-iliac region and radiated down the posterior aspect of the right thigh and leg. The pain was shooting in character, and was aggravated by coughing. It was particularly severe at night but the patient found that she could obtain relief by getting up and walking about.

The patient appeared to be in great distress. No weakness was demonstrable in her lower extremities. Kernig's and Laseque's signs were positive on the right side. The deep reflexes were hypo-active in the right lower extremity; no pathological reflexes were demonstrated. A mild impairment of pain and temperature sensibility was noted over the right buttock and thigh. Pressure over the third lumbar vertebral spine was painful.

X-rays of the lumbosacral spine disclosed no abnormality. Xanthochromic spinal fluid under low pressure was obtained by lumbar puncture at the fourth lumbar interspace and there was no rise of pressure on jugular compression. Examination of the fluid showed it to contain more than 300 mgm. of protein per c.c. and 2 cells per cubic mm.

With the intention of performing an air myelogram, a needle was subsequently inserted into the third lumbar interspace but a "dry tap" resulted, and the same thing occurred when the needle was shifted to the second interspace. It was concluded that the needles were entering the tumor, which was thereby localized by the method of multiple spinal punctures.

Removal of the laminae of the first three lumbar vertebrae was required to expose the tumor completely, which was found to occupy a central position among the fibers of the cauda equina, being at no point adherent to the dura or any of the nerve roots. The tumor was attached to the conus medullaris near its tip by a narrow stalk which contained the vascular supply of the tumor. A single silver clip sufficed to occlude the stalk and its vessels, following which the stalk was cut and the tumor removed.

The patient made an uneventful convalescence and was dismissed from the hospital at the end of two weeks. She was seen again six and one-half months after operation, at which time she was free from pain and no neurologic abnormalities could be demonstrated.

The tumor was soft, and had a thin capsule and contained several small cysts containing yellow mucoid material. Sections showed it to be a meningioma of a cellular type.

*Comment.*—This case was an exception to many of the general rules which apply to meningiomas of the spinal cord and is in some respects unique. The situation of the tumor in the region of the cauda equina was unusual, but even more extraordinary was the absence of any dural attachment, a feature which is almost constant among spinal cord meningiomas. Grossly the tumor presented very much the appearance of an ependymoma of the filum terminale, lying as it did among the fibers of the cauda equina just distal to the conus terminalis. When the tumor was elevated, however, it was found to have no connection with either the filum or any of the nerve roots, and to arise from the pia mater of the conus very near its tip. Histologic study established its identity as a meningioma.

Clinically this case was a typical example of a tumor of the cauda equina. The onset of low back and right sciatic pain following an injury suggested the possibility of a protruded intervertebral disk but the neurologic findings and the results of spinal puncture indicated the presence of a more extensive lesion. The short history of typical root pain and the high protein content of the spinal fluid led to a pre-operative diagnosis of neurofibroma of the cauda equina.

This patient illustrates the fact that while we may discern patterns of behavior which will permit a pre-operative diagnosis of the histologic type of spinal cord tumor in a fair number of instances, we cannot approach complete accuracy in our predictions.

### Surgical Considerations

An exact knowledge of the location of a spinal cord tumor is a prerequisite to any surgical attack if we are to avoid the extensive exploratory laminectomies which were often necessary before the development of modern radiologic methods. It is noteworthy that in none of the four cases in this series was it necessary to employ lipiodol to locate the tumor. This is not intended as a condemnation of the use of lipiodol, for it is recognized that only by its use may many spinal cord tumors be detected and localized. The irritating effects of lipiodol are of minor importance when contrasted with the potential dangers of a spinal cord tumor. It should be emphasized, however, that other simpler methods of localization are available and that these methods will suffice in many instances.

The trend of modern spinal cord surgery is toward smaller incisions, accurately placed, with the removal of just enough bone to permit adequate exposure of the lesion. In the present series of cases the removal of two pairs of laminae permitted removal of the tumor in two instances; in the other two cases three pairs of laminae were removed. The operative mortality rate which attends operations for the removal of the meningiomas of the spinal cord is low, the greatest risk being in the case of tumors in the cervical region where manipulation of the cord may lead to hyperthermia and death. Learmonth reported a mortality of 10 per cent in a series of cases from the Mayo Clinic. Modern operative methods, by reducing shock, and modern chemotherapy, by preventing and combatting urinary infection and pneumonia, should result in a further reduction of the operative risk. The only death in this small series was the result of a pulmonary embolus, a complication for which we as yet have no adequate prophylaxis or treatment.

Most intraspinal meningiomas can be completely removed. Exceptions to this rule are the extensive flat tumors which tend to encircle the spinal cord, and tumors placed exactly anterior to the cord, the removal of which would require a degree of displacement of the cord which is not permissible. In these cases decompressive laminectomy alone may have a beneficial, though not curative, effect. As was first emphasized by Cushing, it is essential to remove not only the



tumor but also that portion of the dura to which it is attached, if recurrence is to be avoided.

The degree of restoration of function which follows removal of a spinal cord tumor depends upon the extent of the structural changes in the cord which have resulted from the pressure of the tumor. In general, the cord is better able to adjust itself to a slowly progressive compression, even though it be of considerable degree, than to a rapidly developing compression which produces circulatory disturbances in the cord with resulting myelomalacia. Since meningiomas are a slowly growing type of tumor, a considerable degree of restoration of function may be anticipated following their removal in most cases, and such improvement may continue for over a year after the removal of the tumor.

The only series of meningiomas of the spinal cord which has been subjected to adequate follow-up study is that of Cushing, the results of which may be cited. Among seventeen patients operated upon, one died as a result of operative shock. The tumor was not removable or recurred in five patients, most of whom were operated upon before the importance of removing the involved dura was realized. Three of these five patients were operated upon a second time, with one operative fatality. The other two eventually died as a result of progression of their lesions. The tumor was completely removed and did not recur in ten patients. Two of these died after five and seven years respectively from intercurrent causes. The remaining eight patients (over one-half of those operated upon) were living and gainfully employed after periods ranging from ten to twenty-three years.

### Summary

A group of four meningiomas of the spinal cord removed surgically during the past year have been reported to illustrate the clinical and surgical aspects of these tumors.

Meningiomas constitute one-fourth of all neoplastic spinal cord tumors. They are solitary, benign tumors which arise in the spinal meninges and compress but do not invade the spinal cord. Their symptoms are those of spinal cord tumors in general, consisting of varying combinations of

nerve root pain and signs of spinal cord compression. A spinal cord tumor may be suspected of being a meningioma when it occurs in the thoracic region of the spine in a woman of adult years and has produced symptoms for one to two years. Occasionally a positive pre-operative diagnosis may be made by visualizing a calcified meningioma radiographically.

Most meningiomas of the spinal cord may be completely removed surgically with a gratifying restoration of function. The risk attending such operations has been reduced by refinements of technique which necessitate accurate pre-operative localization of the tumor. The subarachnoid injection of lipiodol is the most frequently employed localizing method and is the only effective method in many cases. Other and simpler methods are also available, as is demonstrated by the present series of cases in which one tumor was visualized by direct radiography, one was found by the method of multiple spinal punctures and the remaining two were demonstrated by air myelography.

### References

1. Adson, A. W.: Intraspinal tumors: Surgical consideration. *Int'l. Abstr. Surg.*, 67:225-237, (Sept.) 1938.
2. Bailey, Percival and Bucy, Paul: The origin and nature of meningeal tumors. *Am. Jour. Cancer*, 15:15-54, (Jan.) 1931.
3. Bradford, T. K.: Spinal meningiomas. *Southern Surgeon*, 9:722-732, (Oct.) 1940.
4. Camp, J. D.: The roentgenologic localization of tumors affecting the spinal cord. *Am. Jour. Roentgenol. and Radium Therapy*, 40:540-544, (Oct.) 1938.
5. Cushing, Harvey: The meningiomas (dural endotheliomas): Their source and favored seats of origin. *Brain*, 45:282-316, (Oct.) 1922.
6. Cushing, Harvey and Eisenhardt, Louise: *Meningiomas*. Springfield: C. C. Thomas, 1938. 785 pp.
7. Dandy, W. E.: The diagnosis and localization of spinal cord tumors. *Ann. Surg.*, 81:223-254, (Jan.) 1925.
8. Eaton, L. M., and Craig, W. McK.: Tumor of the spinal cord: Sudden paralysis following lumbar puncture. *Proc. Staff Meetings Mayo Clinic*, 15:170-172, (Mar. 13) 1940.
9. Elsberg, C. A.: Concerning the clinical features and the diagnosis of extramedullary meningeal and perineural fibroblastomas of the spinal cord. *Bull. Neurol. Inst. New York*, 3:124-137, (June) 1933.
10. Elsberg, C. A., and Cramer, Fritz: Multiple lumbar punctures: their value for the localization and diagnosis of tumors of the cauda equina. *Arch. Neurol. and Psychiat.*, 23:775-783, (April) 1930.
11. Ford, F. R.: *Diseases of the nervous system in infancy, childhood and adolescence*. Springfield: C. C. Thomas, 1937, 953 pp.
12. Globus, J. H.: Meningiomas. *Arch. Neurol. and Psychiat.*, 38:667-712, (Oct.) 1937.
13. Grant, W. T., and Cone, W. V.: Graduated jugular compression in the lumbar manometric test for spinal subarachnoid block. *Arch. Neurol. and Psychiat.*, 34:1194-1201, (Dec.) 1934.
14. Hassin, G. B.: Villi (Pachionian bodies) of the spinal arachnoid. *Arch. Neurol. and Psychiat.*, 24:65-78, (Jan.) 1930.
15. Learmonth, J. R.: On leptomeningiomas (endotheliomas) of the spinal cord. *Brit. Jour. Surg.*, 14:397-471, (Jan.) 1927.
16. Rasmussen, T. B., Kernohan, J. W., and Adson, A. W.: Pathologic classification, with surgical considerations, of intraspinal tumors. *Ann. Surg.*, 111:513-530, (April) 1940.

## DEMONSTRABLE GENITO-URINARY DISEASE IN THE PRESENCE OF NORMAL URINARY FINDINGS\*

WILLIAM ELLIOTT, M.D.

Virginia, Minnesota

THE great preponderance of cases seen by the urologist in any given length of time are cases that naturally present symptoms or signs relating directly to the genito-urinary tract. However, in the course of time quite a number of patients who have little or no evidence of genito-urinary disease have been referred for study solely because examination of the other systems failed to reveal a definite cause for their complaints. Among this group a considerable number can be shown to have a definite genito-urinary disease accounting for their symptoms.

Many of these patients have undergone a large variety of diagnostic procedures covering periods of time from weeks to months. A few have been advised to accept surgical interference, frequently without any clear indications, and in many cases operations have been resorted to for removal of the appendix and gall bladder, only to find that after recovery from the surgical procedure their complaints still persisted.

It recently suggested itself to us that it might be worthwhile to ascertain what percentage of the general practice of urology this class of case represents, and to determine as far as possible what factors are responsible for these people seeking urologic consultation only when everything else has failed.

Three hundred consecutive cases, in which complete urologic study seemed necessary to arrive at an accurate diagnosis, were chosen from the files in an effort to answer these questions. Cases presenting a frank urologic picture such as the obvious prostatic syndrome were not included.

In 234 of these cases there was sufficient evidence pointing to disease of the genito-urinary tract, accompanied by pathological findings in the urine so that the physician could hardly be misled as to the location of the patient's difficulties. The remaining sixty-six cases are the ones that concern us in the present study. In this group of sixty-six, twenty-eight patients had def-

inite disturbances of urination and the remaining thirty-eight complained of miscellaneous aches and pains but little or no symptoms suggestive of genito-urinary pathology. Prominent amongst these complaints were vague aches and dull constant pain in the superpubic region, vague backache and disturbances varying from a dull dragging sensation to actual pain in the costal-vertebral region. Both of these groups have one thing in common: they all had, upon one or more occasions, been found to have a negative urine, using the term "negative urine" to indicate a normal specific gravity, absence of albumen and sugar, and casts, white or red cells in the microscopic examination.

In discussing the possibility of genito-urinary disease with these patients and the necessity for proper examination, it became quite evident that most of them felt that because one or more voided specimens of urine had been reported as negative, there was little, if any, reason to investigate the urinary tract any further. This attitude was evident in the group of twenty-eight who had definite urinary symptoms, as well as in the thirty-eight whose complaints were vague enough to justify to some extent their attitude. Further discussions frequently elicited the information that many times it was not only the patient's evaluation of the significance of the negative urine that was misleading them, but also the emphasis placed by their physician on the importance of this single diagnostic procedure.

Among the group of twenty-eight referred to as having definite urinary disturbances, there were eleven cases of bladder neck disease, that is, chronic inflammatory changes at the vesicle neck, characterized by cysts and polyps; four cases of leukoplakia; two urethral caruncles; one papilloma of the verumontanum; ten cases of chronic, low-grade pyelonephritis, all producing symptoms sufficiently distressing to make semi-invalids out of the patients. In the ten cases of low-grade, chronic pyelonephritis, there were definite anatomical changes in the kidney pelvis demonstrated on pyelograms and the infecting agent was identified in the urine by resorting to cultures

\*From the Lenont, Peterson Clinic, Virginia, Minnesota. Read before the annual meeting of the Northern Minnesota Medical Association, Duluth, Minnesota, July 19, 1940.

of the sediment thrown down by the high speed centrifuge at 3500 R.P.M. one-half hour.

The group of thirty-eight with indefinite symptomatology and the negative urinalyses constitutes the most interesting series and it is from

centrifuge and culture methods revealed bacteriological findings in the urine which explain the anatomic changes seen in the pyelograms in the cases of pyelonephritis in both groups just mentioned.



Fig. 1. Case I. Grade I pyelectasis on right; compression of pelvis by psoas muscle with some blunting of the cups.



Fig. 2. Case I. Dilatation of the ureter in the middle third and an excursion of the right kidney of about 2 inches.



Fig. 3. Case II. Kidney pulled downward and merging into a large mass with a grade II pyelectasis and obliteration of the minor calyces.

these that eight cases have been selected for presentation. This group includes:

- 1 hypernephroma
- 1 polycystic kidney (unilateral)
- 1 renal tuberculosis
- 1 aberrant vessel
- 3 cases of ptosis of kidney, sufficient to produce symptoms.
- 1 infected hydronephrosis

It would seem desirable to present a short summary of each of these cases individually by way of illustrating the variety of serious disease that can be encountered in the presence of normal routine urinalyses. Seventeen of the thirty remaining cases showed varying degrees of pyelonephritis and low-grade chronic infections of the bladder which responded to suitable treatment. There were three severe prostatic infections which curiously enough presented no symptoms referable to the prostate; eight showed an absence of any genito-urinary pathologic changes; two showed fibroses of the sphincter (females).

It is worth noting that routine bacteriological studies combined with the use of the high speed

## Case Reports

**Case 1.**—Mrs. A. A., white, aged twenty-five (October 30, 1939) had a sudden attack of severe abdominal pain on the right side, commencing in the region of the gall bladder and radiating downward and to the back. There was no nausea or vomiting; the pain was markedly worse when standing and walking; it was dull and rather aching in character, but there were occasional attacks of sharp, knife-like pains. The patient sought medical advice and was advised to have the gall bladder removed, but refused operation at that time. By doing very little housework and lying down most of the time, she was able to stay fairly comfortable but she lost about 15 pounds in weight and was mentally very depressed at the time that she came to the clinic for examination.

General physical examination was negative except for some tenderness in the region of the gall bladder. This tenderness extended down the general course of the ureter. There was slight costovertebral tenderness. Blood examination revealed a hemoglobin of 90 per cent; 4,410,000 red blood cells; 9,400 white blood cells. The voided specimen was clear; specific gravity, 1.018; acid reaction; negative for albumen and sugar, with only an occasional pus cell; negative Wassermann reaction.

Upon cystoscopy the bladder wall appeared normal throughout except for a mild trigonitis which led up to the ureteral orifices on both sides. A No. 6 shadowgraph catheter passed easily to the pelvis of each kid-

ney. Ten cc. of diadrast were injected on the right; 6 cc. on the left.

The bladder specimen showed an occasional w.b.c. no organisms on direct smear, dye appearance in 3.5 minutes. There were no cells and no growth was revealed on culture from either bladder or kidney specimens. There was no evidence of disease on the flat plate. Pyelograms reveal a poorly filled left kidney (Fig. 1) but no definite evidence of disease; the right kidney is well filled and shows a grade I pyelectasis with some dilatation of the upper major calyx and a narrowing of this calyx as it leaves the pelvis. The cups show some blunting. On a film made in the upright position (Fig. 2) there is a dilatation of the ureter in the middle third; the kidney drops about two inches and the position of the kidney suggests possible interference with drainage. A 10-minute upright drainage picture shows no evidence of retention of dye.

It was felt that the ptosis observed, combined with a stricture below the dilated portion of the ureter could account for this patient's symptoms. A properly fitting kidney belt was applied and the ureter dilated to 10F. She was seen again at intervals for the past year and states that as long as she wears the belt, she is entirely free from pain and distress. She is able to do her housework and in May, 1940, she had gained fifteen pounds in weight.

*Case 2.*—M. B., aged thirty-two, was seen in the clinic first on June 19, 1939. His chief complaint was severe abdominal pain, generalized throughout the abdomen. There was a constant dull ache with attacks of sharp and severe pain lasting two or three hours. The pain came on suddenly about twenty-four hours before the patient was seen, lasting about four hours; morphine was necessary for relief. After the attack stopped, the patient felt entirely well. There was a recurrence about three hours later with no urinary symptoms. The patient stated that he had been perfectly well up to this time except for an attack of renal colic fifteen years ago at which time he passed a stone. At that time his attention was called to a mass in his left side. The patient and family do not believe that there has been an increase in size but upon palpation the mass appeared to be about 18 cm. by 10 cm., soft, not particularly tender, and was freely movable. The patient had been told that this mass was a floating kidney.

General physical examination was entirely negative except for the presence of the mass. Blood examination revealed a hemoglobin of 86 per cent with 5,300,000 red blood cells. Voided specimen was pale straw colored, clear, with a specific gravity of 1.006; neutral reaction, no pus, no red cells and negative for sugar, with a very faint trace of albumen. The blood Wassermann was negative. Flat plate of the abdomen showed a large mass extending from the twelfth rib and dipping below the brim of the pelvis on the left side.

Upon cystoscopy, the bladder wall appeared normal throughout. A No. 6 shadowgraph catheter passed easily to the pelvis of each kidney. Phenolsulphonephthalein appearance time on the right was six minutes;

on the left no secretion was obtained and no dye appeared in a half hour. Ten c.c. of diadrast were injected and pyelograms taken. A radiograph (Fig. 3) made after the injection of diadrast showed the pelvis of the kidney pulled downward, and apparently connecting with the mass seen on the flat plate. There was a grade II pyelectasis with a marked loss of cupping. A diagnosis of renal tumor was made.

In view of the length of time that the mass had been present, the general good health of the patient, and the fact that there was some slight calcification on the lower portion, it was felt that this was probably a single cyst of the kidney. Operation was advised and a large, firm mass, 19 cm. x 6 cm. x 6 cm., arising from the lower pole of the kidney was found, which appeared to be a hypernephroma. Nephrectomy was carried out and the diagnosis of hypernephroma was confirmed by the pathologist.

*Case 3.*—Mrs. E. D. C., aged fifty-six, complained chiefly of intermittent attacks of chills and fever accompanied by pain on the right side, occasionally attended by severe nausea but no vomiting. In 1922 the patient had the first attack similar to the one described above. She was in bed for two weeks and was placed on a diet. Following this she was quite well until 1931 when the trouble recurred. Since that time these attacks have been becoming more and more frequent. In 1934 she was told that her difficulties were due to gall-bladder disease and the gall bladder was removed. Following operation she made an uneventful recovery but her symptoms recurred within two weeks and continued up until the present time. Lately these attacks were coming about every three to four weeks and increasingly severe.

General physical examination was essentially negative. Blood examination revealed a hemoglobin of 84 per cent; 4,190,000 red blood cells; 8,800 white blood cells with a normal differential count. Voided specimen was straw colored and clear; specific gravity, 1.014; alkaline in reaction; negative for albumen and sugar; occasional pus cell; no red blood cells; negative Wassermann. In view of her history it was decided to investigate the urinary tract.

Upon cystoscopy the bladder showed a plus 2 cystitis throughout. The entire trigone was covered with bulbous edema. A No. 5 shadowgraph catheter passed easily to the pelvis of each kidney and specimens were collected for study. Phenolsulphonephthalein appearance time was eight and one-half minutes on the right; four minutes on the left with 3 per cent of the dye recovered from the right; 15 per cent from the left in a 15-minute specimen. Bladder cell count showed a high powered field loaded with pus cells; culture revealed *B. coli* growth; guinea pig inoculation negative. Specimen from the right kidney revealed numerous w.b.c.'s; culture revealed *B. coli* growth; negative guinea pig inoculation; left kidney specimen had an occasional w.b.c.; very rare r.b.c.; few epithelial cells; culture revealed a *B. coli* growth; negative guinea pig. It is worthy of note that the cystoscopic examination was made four days after the specimen of urine was col-



# GENITO-URINARY DISEASE—ELLIOTT

lected which was reported as negative, but at the time of the examination of the voided specimen the patient's temperature was 102, while at the time of cystoscopy temperature was normal, suggesting that a temporary block had prevented the urine from the infected side

showed grade II dilatation with marked clubbing in the middle and superior calices. (Fig. 4) twenty-minute upright drainage film (Fig. 5) showed complete retention of dye on the right side.

A diagnosis of pyonephrosis was made. On Septem-

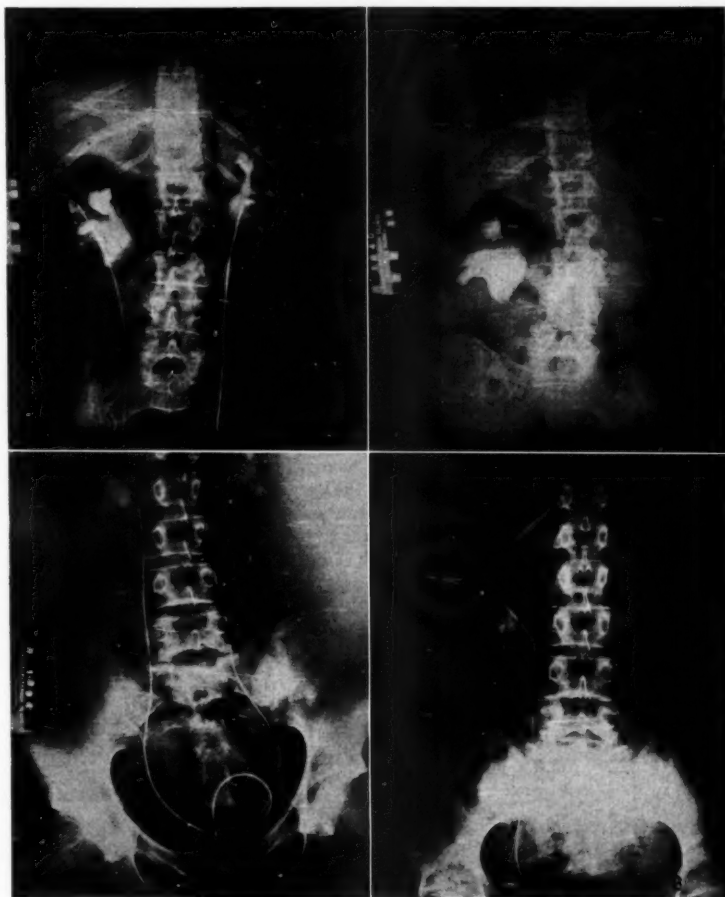


Fig. 4 (upper left). Case 3. Grade II dilatation of the renal pelvis and marked clubbing in the middle and superior calices.

Fig. 6 (lower left). Case 4. Grade I pyelectasis on the right side; middle calyx rather sharply cut off; some clubbing of the cups of the upper calyx; dilatation of the ureter.

Fig. 5 (upper right). Case 3. Roentgenogram taken twenty minutes after the removal of the catheter with patient in upright position showing complete retention of dye on the right side.

Fig. 7 (lower right). Case 4. An excursion of the kidney about 2.5 inches.

from entering the bladder, thus accounting for the lack of findings in the urine. The patient stated that she had been told upon several occasions that "there was nothing in the urine" and it is probable that the specimens were taken under similar conditions.

A flat plate of the abdomen showed no evidence of disease. Five c.c. of diadrast were injected on the left; 12.5 c.c. on the right. The left kidney showed no evidence of disease. On the right side the renal pelvis

ber 14, 1938, a nephrectomy was performed and the pre-operative diagnosis confirmed. This patient was seen about one year later and said that she has had no trouble of any kind since the operation.

*Case 4.*—E. G., A female, age eighteen, complained chiefly of a mild aching and distress in the right lower quadrant, present for approximately two years. About one and a half years before, the appendix was removed but the operation was followed by no relief of symp-

toms. The ache never varied; it was practically the same night and day, though not severe enough to wake her up. She had never, at any time, had any urinary symptoms, i. e., frequency, nocturia or hematuria.

General physical examination revealed very slight tenderness at the costovertebral angle and slight tenderness over the course of the ureter, but otherwise was negative. A voided specimen taken when she first entered the clinic was negative for sugar, albumen and cells. The Wassermann reaction was negative.

Upon cystoscopy the bladder wall appeared normal throughout except in the region of the right ureteral orifice. Five or six small pin-head sized bullae were seen; there was a small patch of leukoplakia in the lower part of the trigone, extending down into the urethra. A No. 5 shadowgraph catheter passed easily to the pelvis of each kidney. Phenolsulphonaphthalein appearance time was two and one-half minutes on the left; four minutes on the right. Culture showed no growth. Guinea pig inoculation showed no evidence of tuberculosis.

Films made after the injection of diadrast show grade I pyelectasis of the right side (Fig. 6). The middle calyx is rather sharply cut off; the upper calyx is blunted and shows some clubbing. The ureter is dilated above a point of narrowing about 6 cm. below the ureteropelvic junction. A film taken in the upright position (Fig. 7) demonstrates an excursion of about two inches. A ten-minute upright drainage film shows no retention of dye.

A diagnosis of chronic pyelonephritis of the right kidney, ptosis of the right kidney, and stricture of the right ureter, was made. The ureter was dilated upon several occasions, the area of leukoplakia fulgerated and the patient was supplied with a well-fitting kidney belt. When seen about a year later she stated that while she occasionally still has some disturbance, the greater part of the time she was entirely free from symptoms.

*Case 5.*—Mrs. V. W. M., aged thirty-six, complained chiefly of pain in the right side, dull and aching in character. The onset of the pain was extremely indefinite but it had been present off and on for about a year and a half. Occasionally there was a sharp attack of pain lasting for only a few minutes, which radiated towards the bladder region. There was also a sense of weight in the right side. There was no history of urinary frequency, hematuria, dysuria or nocturia.

Physical examination was essentially negative except for very slight costovertebral tenderness and the right kidney could be palpated and seemed to be somewhat larger than normal. Voided specimen (July 24, 1939) had a specific gravity of 1.002; acid reaction; negative sugar and albumen; and no white or red cells. The blood Wassermann was negative.

Upon cystoscopy (July 27, 1939) the bladder appeared normal throughout. A No. 5 shadowgraph catheter was passed into the pelvis of the left kidney but could not be passed more than 10 cm. on the right side. Diadrast was injected and pyelograms were

taken. At the time of cystoscopy the bladder urine showed a few clusters of white blood cells but no organisms; culture revealed no growth. No urine was obtained from the right. The phenolsulphonaphthalein appearance time on the left was two minutes, five seconds; the specimen showed no growth on culture.

Films made after the injection of diadrast revealed no pathology on the left side but on the right side the dye did not go beyond the region of the ureteropelvic junction (Fig. 8) and suggested a complete block such as is seen in tumors filling the kidney pelvis. A second film taken (Fig. 9), using more dye, gave a film in which the apparent block of the ureteropelvic junction was still present, but some dye had been pushed beyond this in a thin line as though lining a cavity. Above this there was a round area which appeared to be a cavity and this round area had a feathered edge, suggestive of the type of necrosis seen in tuberculous disease. A diagnosis was made of a non-functioning kidney, due to tuberculous pyonephrosis but the possibility of a kidney tumor was also considered.

Nephrectomy was performed and a large pyonephrotic kidney was removed. The pathologist reported tuberculous pyonephrosis.

*Case 6.*—E. T., aged eighteen, a female, whose chief complaint was pain in the right lower quadrant, dull, aching in character, but not very severe; no nausea or vomiting. The patient stated that she had the first attack about four months prior to being seen in the clinic. She was kept in bed for three days and apparently completely recovered. About a month later she was seized with a similar attack and advised to have her appendix removed. Appendectomy was performed but shortly after she again had a recurrence of her pain. It gradually became more constant, was not colicky in nature and not very severe. There was a history of one attack of frequency of urination, lasting about three days, following the appendectomy. As the patient had been catheterized at this time, the frequency would not appear to have any special significance.

Physical examination was entirely negative except for slight costovertebral tenderness on the right side. Voided specimen was straw colored, clear; specific gravity, 1.018; acid reaction; no albumen or sugar; very occasional pus cell. The blood Wassermann reaction was negative.

Cystoscopy revealed a normal bladder throughout. A No. 5 shadowgraph catheter passed easily to the pelvis of each kidney. Bladder urine showed a very occasional w.b.c.; culture was negative. Specimen from the kidneys revealed an occasional r.b.c. and epithelial cell; culture showed no growth.

A flat film of the urinary tract showed no evidence of pathologic change. Films made after injecting diadrast showed no evidence of disease on the left side; on the right side there was a grade I hydronephrosis with blunting of the cups of the calices. The ureteropelvic junction showed a filling defect with a sharp line of demarcation, suggesting obstruction at this point (Fig.

10). A drainage film twenty minutes later, in the upright position, showed complete emptying on the left side with almost complete retention of dye on the right side (Fig. 11). This type of obstruction could be caused by an aberrant vessel arising from the lower pole of the

The patient stated that she had been perfectly well since the operation.

*Case 7.*—C. L. B., white, male, aged fifty-four, complained chiefly of an abdominal pain, generalized over

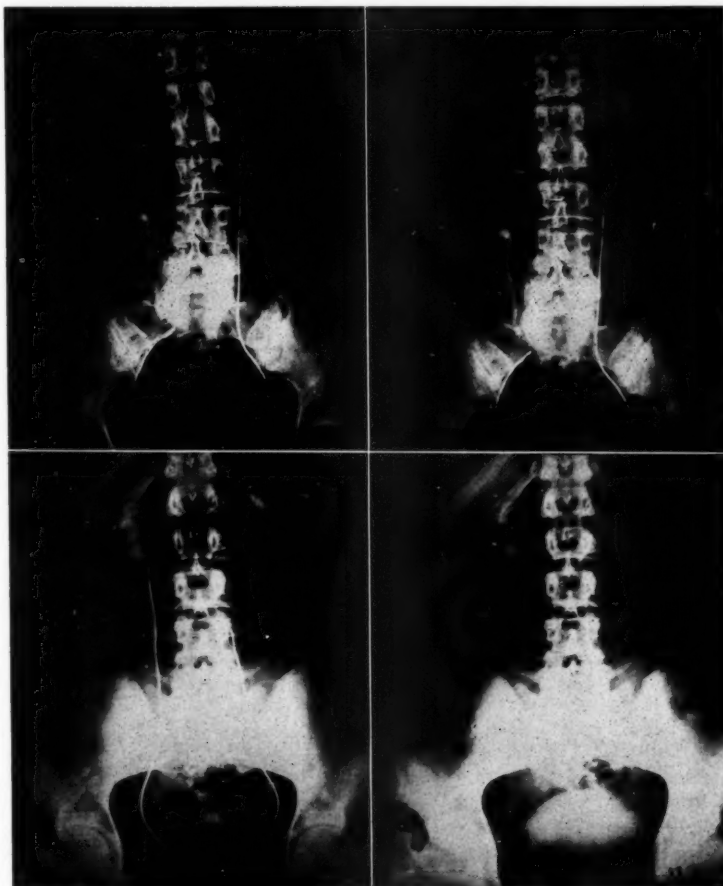


Fig. 8 (upper left). Case 5. Roentgenogram made after the injection of diatrizoate demonstrating a block at the ureteropelvic junction.

Fig. 10 (lower left). Case 6. Roentgenogram made after the injection of diatrizoate showing a sharply defined filling defect at the ureteropelvic junction.

Fig. 9 (upper right). Case 5. After the injection of more diatrizoate, some of the dye may be seen escaping beyond the blocked area and apparently outlining a cavity.

Fig. 11 (lower right). Case 6. Roentgenogram taken twenty minutes after the withdrawal of the catheter, patient in an upright position, showing complete retention of dye.

kidney. Diagnosis was made of a stricture at the ureteropelvic junction, probably due to an aberrant vessel.

Operation was performed and an aberrant vessel was found crossing the ureter at the ureteropelvic junction; the vessel was freed and divided and nephropexy was carried out at the same time. Six months later pyelograms were repeated. The obstruction was no longer present and a ten-minute drainage plate (upright) showed complete emptying of the affected side.

the upper abdomen, and sharp and severe in character. The pain had occurred suddenly a few hours before being seen in the clinic, was rather more severe on the left side and radiated towards the superpubic region.

General physical examination was essentially negative except for some tenderness in the left hypochondrium and along the course of the left ureter. There was a sensation to the examining hand as though a palpable mass was present which might correspond

to the left kidney. The patient was, however, rather obese and it was difficult to be certain. A voided specimen was negative for sugar and albumen, contained no pus nor red cells, was alkaline in reaction; specific gravity, 1.018. The blood Wassermann was negative.

sisted of a large cystic mass. Pathologist reported polycystic disease.

*Case 8.*—Mrs. A. M., aged forty-seven, complained chiefly of nervousness, backache and pain of a dull, dragging, aching character in the right lower quadrant,



Fig. 12. Case 7. Dilatation and distortion of the pelvis of the left kidney and a newly formed cavity filled with diadrast.



Fig. 13. Case 8. Blunting of the cups of the calices on the right side; pyelectasis.



Fig. 14. Case 8. Both kidneys are shown dropping below the brim of the pelvis with consequent kinking of the ureter.

A No. 24 cystoscope passed easily into the bladder and about 2 ounces of residual urine were evacuated. There was moderate trebeculation throughout but no diverticuli were seen. There was a grade II median bar. A No. 5 shadowgraph catheter passed without difficulty into the kidney pelvis on each side. Specimens were collected for study. Phenolsulphonephthalein appearance time was 3 minutes, 45 seconds on the right; 6 minutes, 15 seconds on the left. There were 15 to 20 r.b.c.'s on the right; cultures showed no growth.

Flat plate of the kidney and bladder tract showed a considerably enlarged kidney shadow on the left side with some flaking, suggestive of calcification. A film made after injection of diadrast (Fig. 12), showed a normal kidney pelvis on the right side. The left kidney pelvis was markedly dilated. There was a large area in which dye could be seen, which suggested a newly formed cavity, connecting with the kidney pelvis and extending from the ureteropelvic junction to the lower minor calyx. The pelvis was elongated and while the lower major calyx showed evidence of dilatation, the pelvis itself was narrowed in a way suggesting encroachment. A ten-minute upright drainage picture showed retention of dye in the left kidney pelvis.

A diagnosis of cystic disease of the kidney was made. In view of the severe pain and the absence of any demonstrable pathology on the right side, operation was decided upon. Upon operation, the kidney appeared to have very little functional tissue but con-

present for about sixteen years. In 1922 both tubes and ovaries were removed but the patient's physical symptoms persisted off and on. About six years ago the gall bladder was removed but there was still no relief of symptoms. The patient was seen upon a number of occasions by psychiatrists who made a diagnosis of psychoneurosis bordering upon the manic-depressive type of insanity. She complained very bitterly of the dragging pain and disturbance on the right side and while giving us the impression that it probably was not very severe, there was no doubt that the already unstable nervous system was not helped any by its presence. Unable to find anything to account for her pain, gastro-intestinal x-rays showing no evidence of pathology, it was decided to investigate the urinary tract.

The voided specimen was entirely negative for pus, albumen and sugar. The blood examination was normal except for a mild anemia of a secondary type.

A No. 24 cystoscope passed easily into the bladder. The bladder wall appeared normal throughout. A No. 5 shadowgraph catheter was passed to the pelvis of each kidney. Phenolsulphonephthalein appearance time on the left was three minutes, fifteen seconds; on the right, four minutes thirty seconds. Six c.c. of diadrast were injected and pyelograms taken (Fig. 13). Pyelograms revealed a marked ptosis of both kidneys (Fig. 14), with poor drainage on the right side.

This patient was advised to wear a kidney support and she states that at the present time, about two



## SULFONAMIDE TREATMENT OF GONOCOCCAL URETHRITIS—CULP

months after wearing the support, she has no aching or distress in the right side. Her mental condition has, at least temporarily, improved. It is possible that the removal of the physical distress may relieve the mental symptoms to some extent.

It is interesting to note that the left kidney is apparently producing no symptoms. In view of the patient's mental condition, it is very difficult to evaluate the symptoms and also the measure of relief afforded. It will be of great interest to follow this case for a period of time and to observe whether or not the relief afforded in both the mental and physical condition by a relatively simple procedure is only transitory or is sufficiently permanent to justify regarding this patient as "cured."

### Summary

Out of 300 consecutive cases in which complete urological study was required for diagnosis, two hundred and thirty-four showed definite findings in the urine, while sixty-six showed no abnormal findings in the urine.

Of this group of sixty-six, twenty-eight had definite disturbances of urination, while thirty-eight had no symptoms pointing directly to the urinary tract.

### Conclusions

The above studies suggest that while the pitfalls of the voided specimen in the female are well recognized and most men check with a catheterized specimen, if pus cells or organisms be present, the pitfalls presented by reliance upon the voided specimen when negative, especially if only one is taken, are not so generally recognized. In the absence of definite findings in cases of obscure abdominal distress, it would probably be wiser to investigate the urinary tract than to subject the patient to major operations. Cystoscopy is a rather innocuous procedure and an easier way to approach the problem than by exploratory operation. Even though cystoscopic examination is not resorted to, the routine methods of examination of the urine could be supplemented by high speed centrifuging and the growing of cultures, procedures which are not technically difficult, but which would frequently disclose the presence of active disease of the genito-urinary tract as evidenced by the number of cases of pyelonephritis in the above series in which positive urinary findings were found by these methods.

---

## SULFONAMIDE TREATMENT OF GONOCOCCAL URETHRITIS

ORMOND S. CULP, M.D.

Saint Paul, Minnesota

RECENT reports on the treatment of gonococcal infections show waning interest in sulfanilamide and increasing enthusiasm for other sulfonamide derivatives. This study was undertaken in an effort to evaluate the various types of therapy which have been employed at the Ancker Hospital from July 1, 1938, to January 1, 1941.

During this thirty-month period 134 males with acute gonococcal urethritis were followed for sufficient time to permit detailed analysis. Diagnosis in each case was made by smears and cultural methods. Ten patients were admitted to the hospital and 124 were treated in the out-patient department. In 106 cases the infection was limited to the anterior urethra, while twenty-eight showed involvement of the posterior urethra (as demonstrated by the three-glass test).

Treatment conformed to five distinctly separate groups: (1) sulfanilamide alone—fifty-six cases; (2) sulfanilamide and simultaneous urethral irrigations—fifty-seven cases; (3) sulfapyridine—ten cases; (4) neoprontosil—eight cases; (5) sulfathiazole—twenty-five cases. Several patients received more than one sulfonamide derivative because of initial failure or drug sensitivity, thus explaining the increased total number of cases in these therapeutic groups and in the subsequent analyses. The results are summarized in Table I.

### Sulfanilamide Alone

An attempt was made to cure fifty-six patients with sulfanilamide alone. One patient had been treated with neoprontosil without success. All others had received no previous treatment. In

SULFONAMIDE TREATMENT OF GONOCOCCAL URETHRITIS—CULP

TABLE 1. SUMMARY OF SULFONAMIDE TREATMENT OF ACUTE GONORRHEA IN MALES

Treatment	Total Cases Treated	Cured by One Course		Recurrence; Cured by Second Course		Total Cured		Unable to Tolerate Drug		Failures	
		No.	%	No.	%	No.	%	No.	%	No.	%
Sulfanilamide Alone	Anterior	19	45.2	3	7.2	22	52.4	1	2.4	19	45.2
	Posterior	6	42.8	0		6	42.8	2	14.4	6	42.8
	Total	25	44.6	3	5.4	28	50.0	3	5.4	25	44.6
Sulfanilamide and Urethral Irrigations	Anterior	26	56.5	7	15.2	33	71.7	1	2.2	12	26.1
	Posterior	6	54.5	0		6	54.5	2	18.2	3	27.3
	Total	32	56.1	7	12.3	39	68.4	3	5.3	15	26.3
Sulfapyridine	Anterior	5	83.3	0		5	83.3	0		1	16.7
	Posterior	2	50.0	0		2	50.0	1	25.0	1	25.0
	Total	7	70.0	0		7	70.0	1	10.0	2	20.0
Neoprontosil	Anterior	4	66.7	1	16.6	5	83.3	0		1	16.7
	Posterior	2	100.	0		2	100.	0		0	
	Total	6	75.0	1	12.5	7	87.5	0		1	12.5
Sulfathiazole	Anterior	17	77.3	3	13.6	20	90.9	0		2	9.1
	Posterior	3	100.	0		3	100.	0		0	
	Total	20	80.0	3	12.0	23	92.0	0		2	8.0

forty-two cases the infection was limited to the anterior urethra. In fourteen instances there was posterior involvement. The urethral discharge had been present for one week or less in forty cases, for eight to fourteen days in seven cases, and for fifteen to twenty-one days in nine cases.

*Cures.*—Twenty-five patients (44.6 per cent) were cured by 1 course of sulfanilamide without supplementary treatment of any type. The cases with posterior involvement responded almost as well as those in which only the anterior urethra was infected (Table I).

Sulfanilamide was administered daily in four equally divided doses and accompanied by equal amounts of sodium bicarbonate. Each patient was started on at least 60 grains (3.96 grams) per day and many received 80 grains (5.28 grams) or more as the initial daily dose. The dosage was reduced to 40 grains (2.64 grams) each day at the end of one or two weeks in those cases which received prolonged chemotherapy. The duration of treatment varied from seven to fifty-four days with the majority of the patients receiving the drug for fourteen to twenty-one days. In most instances sulfanilamide was continued until the urine became perfectly clear in all three glasses. The urethral discharge disappeared in two to thirty days with only five persisting for more than two weeks. Over 50 per cent had no discharge after one week of treatment.

These patients were followed for at least three months after chemotherapy was stopped and many were observed for one or two years. No recurrences occurred despite passage of urethral sounds, prostatic massage and the usual provocative tests.

Three additional patients (with only anterior urethritis) required a second course of sulfanilamide before they were cured. Each had been given 60 grains (3.96 grams) daily for one week, followed by 40 grains (2.64 grams) each day for an additional week. The discharge disappeared within seven days in each case but recurred shortly after the drug was stopped. The second course of sulfanilamide consisted of 40 grains (2.64 grams) daily for twenty-one, fourteen and six days, respectively. Following this there was no further recurrence during the next twelve months.

By including those patients who required two courses of sulfanilamide, cures were obtained in 52.4 per cent of the uncomplicated cases and in 42.8 per cent of those with posterior involvement.

*Toxicity.*—Three patients in this group were unable to tolerate sulfanilamide and the drug was discontinued before cures were effected. One patient developed fever, nausea and vomiting after taking 60 grains (3.96 grams) daily for four days, another had the same symptoms after receiving 40 grains (2.64 grams) daily for three days, and the third developed dermatitis after taking 40 grains (2.64 grams) daily for seven days. These symptoms disappeared after withdrawal of sulfanilamide. All three patients were cured subsequently by other methods. Several additional patients had mild toxic manifestations (e.g., cyanosis, headache, general malaise) which failed to prevent completion of their treatment.

*Failures.*—Twenty-five (44.6 per cent) of the fifty-six patients in this group were able to tolerate sulfanilamide for at least two weeks in doses of 40 to 80 grains (2.64 to 5.28 grams) daily but continued to show gonococci in urethral smears or cultures. The incidence of failure was essentially the same in cases limited to the anterior urethra as in those with posterior urethritis (Table I). Of these twenty-five sulfanilamide failures, eight were cured later with urethral irrigations (protargol or argyrol), six responded to sulfathiazole, four were cured with sulfapyridine, three became sterile with neoprontosil and the remaining four were still infected when last seen. All four of these had posterior involvement.

#### Sulfanilamide and Urethral Irrigations

Fifty-seven patients were treated with sulfanilamide and urethral irrigations simultaneously. The infection was confined to the anterior urethra in forty-six cases and the posterior urethra was involved in eleven patients. None had received any previous treatment. Urethral exudate had been noted for one week or less in thirty-nine cases, for one to two weeks in five cases and for two to three weeks in thirteen cases.

*Cures.*—Thirty-two patients (56.1 per cent) were cured by one course of combined treatment.

Very little difference was observed with the complicated and uncomplicated cases (Table I).

Sulfanilamide was administered in the same manner as in the preceding group. All of the patients were started on 60 grains (3.96 grams) of sulfanilamide daily. In most cases the dosage was reduced to 40 grains (2.64 grams) per day after one or two weeks. Local therapy consisted of anterior urethral irrigations with protargol (0.25 per cent) or argyrol (5 per cent) three times daily. Combined treatment was continued for five to forty-nine days and in most instances was maintained for twenty-one to twenty-eight days because of shreds in the urine. The urethral discharge disappeared in one to twenty-nine days with only six lasting more than two weeks. Sixty per cent of the patients had no discharge within one week.

All of these thirty-two patients conformed to the accepted standards for cure and no recurrences have been noted. Many have been followed for two years since treatment was discontinued.

Seven additional patients (with infection limited to the anterior urethra) required a second course of treatment. All of these had received an average of 50 grains (3.3 grams) of sulfanilamide daily for twenty-one days or more. The discharge ceased within ten days in each case but recurred promptly after cessation of treatment. The second course of therapy consisted of 40 to 80 grains (2.64 to 5.28 grams) of sulfanilamide daily for from nine to twenty-one days, accompanied by protargol irrigations. No further recurrences were noted.

In this group of fifty-seven patients who received combined therapy, cures were obtained in 71.7 per cent of the uncomplicated cases and in 54.5 per cent of those with posterior involvement.

**Toxicity.**—Three patients were unable to tolerate sulfanilamide. All three developed dermatitis after taking 60 grains (3.96 grams) daily for five, six and nine days, respectively. This disappeared in each case after withdrawal of the drug. All three patients were treated subsequently with irrigations alone. One developed a prostatic abscess which required drainage, another had cessation of the urethral discharge but developed polyarthritis and the third was still infected when last seen.

**Failures.**—Fifteen (26.3 per cent) of these fifty-seven patients remained infected after taking 60 grains (3.96 grams) of sulfanilamide daily for at least two weeks. Very little variation was noted between complicated and uncomplicated cases (Table I). Of these fifteen failures, three were cured later with irrigations alone, two were cured with neoprontosil, two responded to sulfapyridine and eight remained infected. (Four of these developed acute epididymitis while receiving irrigations only.)

### Sulfapyridine

No attempt was made at this institution during the past thirty months to compile a series of cases treated with sulfapyridine. Only ten patients were given this drug and while the group is too small for adequate comparison, it is included to complete this study.

All ten patients had failed to respond to some other sulfonamide derivative. Eight had been treated previously with sulfanilamide and two had received sulfathiazole without success. In each case the first drug had been given for at least seven days with a minimum daily dose of 60 grains (3.96 grams). Six patients had only anterior urethritis and four had posterior involvements.

Sulfapyridine was administered in four daily doses of 1 gram (15.4 grains) each for five to twenty-eight days, with comparable amounts of sodium bicarbonate. Only three patients received this drug for more than fourteen days.

Seven patients (70 per cent) were cured. These included two of the four cases with posterior urethritis. Three patients had no discharge within three days and in none of the seven cases did it persist for more than seven days. All seven patients were followed for at least three months without recurrence.

One patient developed nausea, vomiting, dizziness and general malaise after only three days of treatment and was cured later with urethral irrigations.

Two patients received sulfapyridine for fourteen and twenty-one days but continued to show gonococci in urethral smears. Both of these failures responded later to irrigations.

### Neoprontosil

Only eight patients were treated with neoprontosil but this group is included to complete the analysis.



Five of the patients had failed to respond to 60 grains (3.96 grams) of sulfanilamide daily for at least nine days. The other three had no previous treatment. Six patients had only anterior urethritis and two had infection of the posterior urethra.

Neoprontosil was given in daily doses of 40 to 60 grains (2.64 to 3.96 grams) for ten to forty days, with equal amounts of sodium bicarbonate. Only one patient was treated for less than two weeks.

Six patients (75 per cent) were cured by one course of neoprontosil. These included both cases of posterior urethritis. The urethral discharge stopped in five to fourteen days and no recurrences were noted in four to eighteen months after treatment was discontinued.

One patient had recurrence of the discharge after receiving an average of 50 grains (3.3 grams) daily for twenty-eight days but was cured by a second course of 60 grains (3.96 grams) per day for thirty days. No further recurrence was noted during the next eight months.

Another patient (with only anterior involvement) received 60 grains (3.96 grams) each day for twenty days without improvement but was cured later with sulfanilamide.

No toxic manifestations were encountered in this group.

### Sulfathiazole

From July 1, 1940, to January 1, 1941, we treated twenty-five cases of acute gonococcal urethritis with sulfathiazole alone. These are summarized in Table II. Three patients had involvement of the posterior urethra and the infection was limited to the anterior portion in the remaining twenty-two cases. Six patients had failed to improve after taking 40 to 80 grains (2.64 to 5.28 grams) of sulfanilamide daily for at least fourteen days. Another patient had been unable to tolerate sulfanilamide because of toxic manifestations. The remaining eighteen patients had received no previous treatment. The urethral discharge had been noted for seven days or less in twenty-one cases and for eight to fourteen days in four instances.

*Cures.*—Twenty patients (80 per cent) were cured promptly by one course of sulfathiazole. These included the three cases of posterior urethritis.

Sulfathiazole was administered in equally divided doses every six hours. No sodium bicarbonate was given and all patients were instructed to take at least 2500 c.c. of fluids daily while being treated with sulfathiazole. Three patients in this group were given 2 grams (30.8 grains) daily for seven to ten days while the others received 4 grams (61.6 grains) each day for four to nineteen days. Only eight patients were treated for more than ten days (Table II). All received sulfathiazole until the urine was entirely clear. In two cases no trace of urethral exudate could be found twenty-four hours after treatment was started. The longest duration of discharge in any of the cured patients was ten days and most had cessation within one week.

Each patient was subjected to urethral massage over a sound, prostatic massage and repeated examinations and cultures of the urine and prostatic fluid. Every patient in this group has had at least two negative cultures after sulfathiazole was discontinued. All have been observed for at least two months and five have been followed for five months or more without evidence of recurrence.

Three additional patients (with only anterior involvement) had recurrence of the urethral discharge four, nine and twenty-eight days after sulfathiazole was discontinued. Each of these was cured by a second course which lasted five to seven days. No further recurrences have been observed.

By including those patients who required a second course of treatment, cures were obtained in 92 per cent of the twenty-five patients treated with sulfathiazole.

*Toxicity.*—All patients were seen at intervals not exceeding three days while taking sulfathiazole. Urethral smears, urine examinations, blood counts and hemoglobin determinations were made on each visit. No toxic manifestations of any type were encountered.

*Failures.*—Two patients (8 per cent) received 4 grams (61.6 grains) of sulfathiazole for seven and eleven days but continued to have gonococci in the urethral exudate. In both of these cases the infection was confined to the anterior urethra. Both were cured later with sulfapyridine.

# SULFONAMIDE TREATMENT OF GONOCOCCAL URETHRITIS—CULP

TABLE II. SUMMARY OF TWENTY-FIVE CASES OF ACUTE GONORRHEA TREATED WITH  
SULFATHIAZOLE

	Type of Urethritis	Previous Treatment	Sulfathiazole			Result
			Daily Dosage (Grams)	Days Given	No Discharge (Days)	
1.	Posterior	None	4	6	1	No recurrence 6 mo.
2.	Anterior	Sulfanilamide	4	8	7	No recurrence 6 mo.
3.	Anterior	Sulfanilamide	4	4	2	Recurrence 4 days later. Second course: 7 days, same dose. No recurrence 5 mo.
4.	Anterior	Sulfanilamide	4	14	7	No recurrence 5 mo.
5.	Anterior	Sulfanilamide	2	8	8	No recurrence 5 mo.
6.	Anterior	Sulfanilamide Toxicity	2	7	7	No recurrence 5 mo.
7.	Posterior	Sulfanilamide	4	8	8	No recurrence 4 mo.
8.	Anterior	None	4	15	8	No recurrence 4 mo.
9.	Anterior	None	4	7	3	No recurrence 4 mo.
10.	Posterior	Sulfanilamide	4	8	8	Recurrence 9 days later. Second course: 5 days, same dose. No recurrence 4 mo.
11.	Anterior	None	4	19	2	No recurrence 3 mo.
12.	Anterior	None	4	8	8	No recurrence 3 mo.
13.	Anterior	None	4	11	1	No recurrence 3 mo.
14.	Anterior	None	4	12	4	No recurrence 3 mo.
15.	Anterior	None	4	12	5	No recurrence 3 mo.
16.	Anterior	None	4	5	2	No recurrence 3 mo.
17.	Anterior	None	4	9	6	No recurrence 3 mo.
18.	Anterior	None	2	7	7	Recurrence 28 days later. Second course: 7 days, same dose. No recurrence 3 mo.
19.	Anterior	None	4	17	10	No recurrence 2 mo.
20.	Anterior	None	2	10	4	No recurrence 2 mo.
21.	Anterior	None	4	11	7	No recurrence 2 mo.
22.	Anterior	None	4	7	2	No recurrence 2 mo.
23.	Anterior	None	4	6	3	No recurrence 2 mo.
24.	Anterior	None	4	11	Persisted	Failure—cured with sulfapyridine
25.	Anterior	None	4	7	Persisted	Failure—cured with sulfapyridine

## Comment

Blood concentrations of sulfanilamide and sulfapyridine were obtained in a relatively small percentage of the total cases treated and in those instances appeared to be of little or no significance. In the more recent series of patients treated with sulfathiazole, the blood levels were consistently low and of no prognostic value.

Similar findings were noted by most of the other writers on sulfathiazole treatment of gonorrhea.

## Summary

From July 1, 1938, to January 1, 1941, 134 males with acute gonococcal urethritis were treated with various sulfonamide derivatives at the Ancker Hospital. Most of these were treated in the out-patient department. Several required

more than one type of drug before the infection disappeared.

Cures were obtained in 50 per cent of the fifty-six patients treated with sulfanilamide alone; in 68.4 per cent of the fifty-seven treated with sulfanilamide and urethral irrigations; in 70 per cent of ten patients treated with sulfapyridine; in 87.5 per cent of the eight who were treated with neoprontosil; and in 92 per cent of twenty-five patients treated with sulfathiazole.

In a few instances a second course of treatment with the same drug effected cures when recurrence followed the first course of chemotherapy.

Toxic manifestations were encountered with sulfanilamide and sulfapyridine and in several cases the drug had to be discontinued before the patients were cured. No toxicity was noted in the small number of patients treated with neo-

prontosil or the twenty-five who received sulfathiazole.

Failures occurred with each of the five methods of treatment and no doubt are to be expected because of individual variations in therapeutic response and drug sensitivity. All four sulfonamide derivatives included in this study appear to be of some value in the treatment of gonorrhea but sulfathiazole promises to be the most efficacious.

Patients who fail to respond favorably to one sulfonamide derivative after one week of adequate dosage should be tried on another of these related compounds. Prolonged treatment with the same drug in refractive cases appears to be of value only in isolated instances.

The sulfonamide derivatives are suitable for office or out-patient administration but such patients should be seen at frequent intervals and have systematic reviews of all subjective and objective toxic manifestations.

## INTESTINAL OBSTRUCTION DUE TO FOOD\*

HAMLIN MATTSON, M.D., and EVREL A. LARSON, M.D.  
Minneapolis, Minnesota

THE great majority of intestinal obstructions are due to causes extrinsic to the lumen of the bowel. Obturation or obstruction of the lumen from within may be due to gallstones, foreign bodies, enteroliths, worms, meconium in the newborn and fecal obstruction in the large bowel such as the well known fecaliths in the appendix and in Hirschsprung's disease. Obturation made up 2 per cent of a series of 335 cases of intestinal obstruction reported from the Massachusetts General Hospital in 1932.<sup>10</sup> In a series of 875 acute intestinal obstructions exclusive of hernia, neoplasms or peritonitis reported from the Charity Hospital in New Orleans in 1939, 5.8 per cent were due to obturation.<sup>25</sup> Five of the fifty-one cases were due to food.

Enterolith obstruction is seen commonly in horses but rarely in man. However it may be more frequent in man than hitherto indicated in the literature. Enteroliths may be divided into three classes.

1. True enteroliths usually have a small nucleus which may consist of intestinal epithelium, a small fecal mass, fruit stone, gallstone or other foreign body about which alkaline mineral salts of calcium, phosphorus, magnesium or ammonium may be deposited. They are found usually in the large intestine or terminal ileum. They develop in the presence of stasis in an alkaline medium.

2. Mixed stones or food boli usually have husks or fruit peelings as a nucleus. They may contain legumes, fruits, oats, vegetables, meat, seeds and a number of other substances, even grasshoppers as reported by Caleveart from the Belgian Congo, in 1933.

3. Medication enteroliths form following prolonged administration of calcium, magnesium, bismuth or phenyl salicylate.

The term bezoar comes from the Persian "padzahr," meaning antidote or the Arabian "bad-zehr" of the same meaning. In certain countries of the Far East it was believed that the con-

\*From the Medical School, University of Minnesota.

cretions found in the stomach and intestines of ruminants and occasionally in man had certain antidote and therapeutic value. Such views still are entertained there. Bezoar was admitted into the London pharmacopœia as an official remedy until the middle of the eighteenth century.

Food as a cause of intestinal obstruction was described in 1910 by Eichorst of Germany.<sup>9</sup> In 1932 Elliott<sup>10</sup> collected twenty-six cases proven by operation or necropsy. All but ten were reported out of Germany and Austria and most from the time of World War I, when oats were eaten in Russia and so-called "ammunition bread," containing poppy seeds, was eaten in Germany. In 1936 Caylor and Nickel<sup>5</sup> reported two episodes in the same individual. Leisinger<sup>18</sup> collected sixty-six cases from the literature in 1937. There were only eight cases from the United States. Johnson of Minneapolis reported obstruction of the ileum from an apricot.<sup>17</sup> Following a discussion of this subject we will report two cases operated on by one of us (Mattson).

### Etiology

Predisposing factors in obstruction from food have been thought to be (1) such as slow the intestinal stream, (2) increased age with an atonic digestive tract and perhaps deficient digestive mechanism, (3) drinking of large amounts of water with meals, which may dilute the digestive juices and cause swelling of vegetable fibers and (4) constipation with excessive dehydration. The habit of swallowing food whole by the hurried adult and food bolting by children has been shown repeatedly to be a factor. Inefficient chewing is encouraged by ill fitting or no artificial teeth. About half the patients are edentulous. The character of the food is important. Per-simmons are a frequent cause. The skins contain shibuol, a cement substance which, when precipitated by the hydrochloric acid of the gastric juice, agglutinates the seeds and fibers into a bezoar.

### Clinical Features

Obstruction from food reacts on the patient in a manner similar to obstruction by other intraluminal foreign bodies. A palpable intra-abdominal mass sometimes can be felt. Roentgen findings are the same as in other forms of obstruction. Occasionally it is possible to visualize the foreign body and, therefore, it is well to have a clear roentgenogram where intraluminal obstruction is suspected.

Upon opening the peritoneal cavity abnormal accumulations of fluid are found ordinarily. Usually the terminal ileum is involved, next the upper ileum and more rarely the jejunum. Occasionally the bowel over the mass is gangrenous and perforations have been reported. However, food boli usually are soft and putty-like and hence do not erode the bowel as often as gallstones and other foreign bodies. If the obstruction is near the ileocecal valve, the mass soft and the condition of the bowel wall permits, attempts usually are made to break the mass up and milk it into the cecum. In the majority of cases the bowel has been opened and the bolus extracted. Occasionally an enterostomy tube has been placed proximal to the obstruction.

*Case 1.*—Mrs. G. H., sixty-two, was admitted to the hospital May 1, 1937, at 1:30 p.m. At noon April 28 she had eaten large amounts of cocoanut. The evening of April 28 she was seized with crampy colicky pains followed by nausea and vomiting. The cramps were most marked below and to the left of the umbilicus. There were occasional remissions in which the cramps "eased up a bit." She had scanty bowel movements April 29 and April 30. She had been constipated for over twenty years and has been addicted to cathartic abuse. In 1923 she was operated on for peptic ulcer. In 1934 she had an attack of dysuria.

Physical examination showed a moderately obese woman with a moderately distended abdomen. Borborygmi were heard most marked over the left abdomen and were synchronous with abdominal cramps. There was a sense of fullness in the left flank. Her temperature was 100, pulse 110, and respirations were 22.

Urinalysis showed a specific gravity of 1030, straw color, a trace of albumen, no sugar, an occasional granular cast and three to four pus cells in the high dry field after centrifugation for three minutes. The hemoglobin was 92 per cent. There were 4,790,000 red cells and 6,600 white cells in each cubic millimeter of blood. Differential count of 300 cells showed an average of 67.2 polymorphonuclears, 20.6 lymphocytes, 11.6 monocytes and .6 plasma cells in each hundred counted. The Kahn was negative. There was no occult blood in the stool. An enema yielded a few shreds of cocoanut. A scout film of the abdomen showed gas in the small bowel.

A diagnosis of intestinal obstruction was made, nasal suction begun and parenteral fluids given. Symptoms became aggravated and she was operated on eight hours after admission under spinal anesthesia, 150 milligrams of procaine crystals being used.

A left paramedian incision was made. When the abdomen was opened several loops of dilated red bowel presented. The distended bowel was followed to a point where a putty-like mass was palpable in the lumen. About 12 centimeters beyond the mass several



## INTESTINAL OBSTRUCTION—MATTSON AND LARSON

loops of bowel were kinked by old adhesions. The bowel at this point was freed.

The postoperative convalescence was not entirely satisfactory. The day following operation she had a small liquid stool containing numerous white shreds of cocoanut. Nasal suction was discontinued after forty-

She had suffered fracture of the right wrist about three weeks before admission to the hospital.

Physical examination showed a woman of average build with moderate distention of the abdomen. There was generalized mild tenderness throughout the abdomen and borborygmi were heard synchronous with

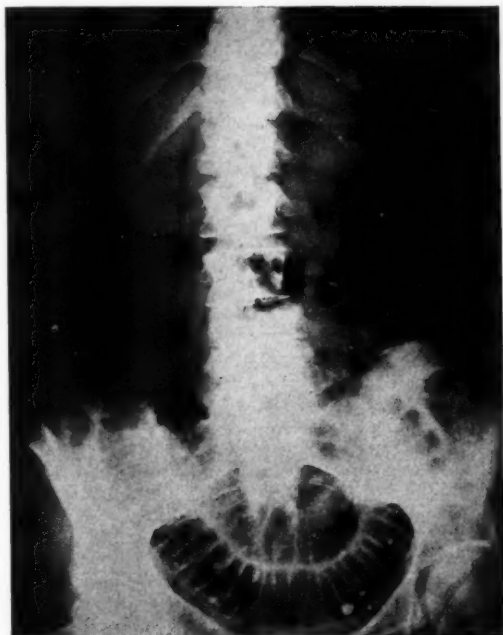


Fig. 1. Case 2. Scout film showing layering of gas in lower ileum from obstruction due to food bolus.

eight hours, and a liquid diet and a half-ounce mineral oil given three times a day. On the third, fourth, twelfth, fourteenth and fifteenth postoperative days she had abdominal discomfort followed by nausea and vomiting. She was discharged from the hospital on the eighteenth postoperative day.

**Case 2.**—Mrs. A. H., aged fifty-one, was admitted to the hospital at 11 p.m. February 24, 1939, complaining of intermittent colicky abdominal pain of thirty-six hours duration. The afternoon of February 23 she vomited four or five times following cramps. February 24 she felt fairly well until late afternoon, when the cramps and vomiting returned. She later recalled having eaten large amounts of chicken skins and some chicken about twenty-four hours before the onset of her cramps. The afternoon of February 24 she was given frequent enemas by her family. The enemas failed to relieve her. There was a little fecal matter with the first enema and some bright red blood with the last. There had been no abdominal operation previously and there was no history of any abdominal disturbance. She had never been constipated, she said.



Fig. 2. Case 2. Foreign body containing chicken skins removed from lower ileum.

intermittent abdominal cramps. Her temperature was 100, pulse 100 and respirations 22. The remainder of the physical examination revealed nothing abnormal.

The Wassermann was negative. Urinalysis was negative. There were 11,300 white cells in each cubic millimeter of blood. A scout film of the abdomen with the patient lying down (Fig. 1) showed ballooning and layering of the terminal ileum.

Nasal suction was begun and fluids were given parenterally. The next morning another scout film showed an increase in the amount of gas in the small intestine and operation was advised.

A low midline incision was made. Greatly distended and injected small intestine presented into the wound. There was no evidence of adhesions within the abdomen. A putty-like intraluminal foreign body was found in the ileum about 40 centimeters from the ileocecal valve. The bowel distal to the foreign body was collapsed. The proximal bowel contained smaller pieces of the putty-like material for a distance of about a meter. It was impossible to move the bolus distally and to crush it threatened too great injury to the bowel wall. The bolus was moved proximally about 20 centimeters and removed through a longitudinal incision opposite the mesenteric attachment. The wall of the ileum was closed transversely. The mass contained chicken skins.

Postoperative nasal suction was instituted at once and fluids given parenterally. Nasal suction was discontinued on the fifth postoperative day and the patient was discharged on the twenty-third postoperative day. On April 30, 1941, she reported she had been well since the operation.

A review of the literature between January 1, 1932, and January 1, 1940, shows an increasing number of cases reported from the United States.

A variety of substances obstructed the bowel, viz.: green corn in the terminal ileum,<sup>19</sup> bran in the terminal ileum,<sup>19</sup> radish and garlic in the jejunum,<sup>22</sup> orange pulp in the lower ileum,<sup>3</sup> grapes in the terminal ileum<sup>18</sup> and in the jejunum,<sup>16</sup> apple in the ileum and a potato three months later in the same ileum,<sup>5</sup> persimmons in the ileum (two cases),<sup>14</sup> collards in the terminal ileum,<sup>12</sup> dried fruit,<sup>20</sup> dried peach at the ileocecal juncture and orange in the lower ileum,<sup>18</sup> dried peach at the ileocecal juncture,<sup>13</sup> dried peach in the small intestine,<sup>2</sup> psyllium in the terminal ileum,<sup>11</sup> oranges in the terminal ileum,<sup>21</sup> dried fruit,<sup>1</sup> clove of garlic,<sup>6</sup> straw,<sup>15</sup> watermelon seeds (two cases), peanuts, beans, potato,<sup>25</sup> dried apple,<sup>23</sup> fig,<sup>8</sup> persimmons in the ileum (two cases),<sup>7</sup> and turtle eggs.<sup>24</sup>

### Summary and Conclusions

Intestinal obstruction due to foods probably occurs more commonly than the operations for it would indicate.

Review of the literature since 1932 shows an increasing number of cases being reported from the United States.

Many cases of so-called "ptomaine poisoning" and intestinal upsets due to food in reality may be short lived intestinal obstructions due to food.

Two cases of intestinal obstruction due to food, proven at operation, are recorded.

### Bibliography

1. Alsen, P.: Case of obturation ileus after consumption of dried fruit. *Nord. med. tidskr.*, 16:1165-1166, (July 23) 1938.

2. Andrews, Fred L., and Walker, Thomas F.: Intestinal obstruction due to ingestion of dried peach. *Jour. A.M.A.*, 109:431-432, (Aug. 7) 1937.
3. Block, Frank B.: Intestinal obstruction caused by food. *Am. Jour. Med. Sci.*, 185:356-357, (March) 1933.
4. Caleveart: Le repas des sauterelles. *Presse méd.*, 2:976, 1933.
5. Caylor, Harold D., and Nickel, Allen C.: Intestinal obstruction from a food bolus. Two episodes in the same individual. *Ann. Surg.*, 104:151-154, (July) 1936.
6. Ciechanowski, S.: Obturationsileus durch Knoblauchzwiebel. *Zentralbl. f. Allg. Path. u. path. Anat.*, 69:357-358, (March 30) 1938.
7. DeBakey, Michael, and Ochsner, Alton: Bezoars and concretions; comprehensive review of the literature with analysis of 303 collected cases and presentation of 8 additional cases. *Surgery*, 5:132-160, (Jan.) 1939.
8. DesJardes, and Bondet: Occlusion aigue de l'intestin grêle par une figue. *Lyon méd.*, 163:708-709, (June 18) 1939.
9. Eichorst, H.: Ueber kirschkernileus. *Med. Klin.*, 2:1559, 1910.
10. Elliott, Albert H.: Intestinal obstruction caused by food; review of the literature and case report. *Am. Jour. Med. Sci.*, 184:85-94, (July) 1932.
11. Fisher, R. E.: Psyllium seeds: intestinal obstruction. *California and West. Med.*, 48:190, (March) 1938.
12. Griffith, F. Webb: Obstruction of small intestine due to food products. *Ann. Surg.*, 103:769-772, (May) 1936.
13. Harless, M. S.: Intestinal obstruction caused by a dried peach. *Ann. Surg.*, 105:295-297, (Feb.) 1937.
14. Hargrave, R. L., and Hargrave, Robert: Acute intestinal obstruction by persimmon phytobezoar; report of two cases. *Ann. Surg.*, 104:65-73, (July) 1936.
15. Hohenwallner, J.: Ein Fremdkörperileus durch ein Stroh-bündel. *Zentralbl. f. Chir.*, 65:854-855, (April 16) 1938.
16. Hugel, K.: Traubenileus. *München. med. Wchnschr.*, 82:1638, (Oct. 11) 1935.
17. Leisinger, F.: Obturationsileus durch Nahrungsmittel. *Schweiz. med. Wchnschr.*, 67:145-147, (Feb. 13) 1937.
18. McIver, Monroe A.: I. Acute intestinal obstruction. II. Acute mechanical obstructions exclusive of those due to neoplasms and strangulated external hernias. *Arch. Surg.*, 25:1106-1124, (Dec.) 1932.
19. Millbourn, E.: Obturation ileus caused by dried fruit. *Svenska läk.-tidning*, 32:1569-1577, (Nov. 8) 1935.
20. Owings, James C.: Acute intestinal obstruction due to ingestion of oranges. *Jour. A.M.A.*, 110:365-366, (Jan. 29) 1938.
21. Pop, A.: Einige Betrachtungen über die mechanische, durch einen lebensmittelvollen verursachte Okklusion des oberen Jejunums in Zusammenhang mit einem Fall. *Zentralbl. f. Chir.*, 59:1675-1678, (July 9), 1932.
22. Postel, H. J.: Ileus caused by undigested piece of dried apple. *Nederl. tijdschr. v. geneesk.*, 83:1959-1960, (April 29) 1939.
23. Rambo, C. M., Lasky, Lester, and Iden, J. F.: Unusual cause of intestinal obstruction. *Ohio State Med. Jour.*, 35:261, (March) 1939.
24. Storck, Ambrose: Rothschild, Joseph E., and Ochsner, Alton: Intestinal obstruction due to intraluminal foreign bodies. *Ann. Surg.*, 109:844-861, (May) 1939.

### Sulfadiazine

The Council on Pharmacy and Chemistry has given consideration to further sulfonamide derivatives; in particular, the 2-sulfanilamidopyrimidine homologue of sulfanilamide, for which it has recognized the nonproprietary name sulfadiazine. In this connection the Council has considered a preliminary report on sulfadiazine prepared by Dr. Perrin H. Long, and authorized its publication. Sulfadiazine has been distributed for experimental use and clinical investigation. Dr. Long reports that it is too early to make a statement regarding the relative clinical therapeutic merits of sulfadiazine, sulfanilamide, sulfapyridine and sulfathiazole. Their experience to date, however, leads them to believe that sulfadiazine is slightly less effective than sulfapyridine or sulfathiazole in the treatment of pneumococcal pneumonia in human beings; that it is of definite value in the treatment of hemolytic streptococcus and staphylococcal infections in man; and that it produces fewer toxic manifestations than either sulfanilamide, sulfapyridine or sulfathiazole. According to Dr. Long, there is insufficient information at hand on which to establish adequate standards of dosage with sulfadiazine. Dr. Long concludes: The evaluation of this new chemotherapeutic agent will necessitate extensive experimental and clinical investigation in order to determine its true value. Until the time when such data are available, it is to be hoped that preliminary enthusiasms will not outrun the common sense which we have gained as a result of our experiences with sulfanilamide and its other derivatives during the past five years. (*Jour. A.M.A.*, May 24, 1941, p. 2399.)

## CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

Frank C. Andrus, Pathologist

### CHEMOTHERAPY OF PNEUMONIA

(A Review of 233 Cases)

MARTIN S. BUEHLER, M.D., and  
GEORGE E. FAHR, M.D.

The case is that of a sixty-year-old white man who was admitted to the hospital on March 15, 1941, and who expired thirteen days later. At the time of admission very little history could be obtained because the patient was in a state of acute alcoholic intoxication. It was learned that the patient had been suffering from an upper respiratory infection for three weeks prior to admission and that he had been drunk for approximately the same length of time. Physical examination revealed the temperature to be 105.5 degrees, the pulse 130 per minute, and the respirations 24 per minute. The patient was well developed and well nourished. He was obviously very drunk. There was a purulent exudate in both conjunctival sacs. The pharynx was injected. Examination of the chest revealed impaired resonance and high-pitched breath sounds associated with many crepitant râles in the right base posteriorly. The heart sounds were difficult to hear because of the noisy breathing. The blood pressure was 130/70. The abdomen and the extremities were negative. An x-ray film of the chest revealed an extensive density in the region of the right lower lobe which was interpreted as lobar pneumonia.

*Laboratory findings:* Wassermann negative, hemoglobin 75 per cent, erythrocyte count 3,800,000, leukocyte count 25,000, of which 89 per cent were polymorphonuclears. Urine negative. Type VII pneumococci were recovered in the sputum.

The patient was placed in an oxygen tent and sulfathiazole was administered intravenously. This was continued and adequate blood levels of the drug were obtained but the patient showed very little clinical improvement. The temperature continued to vary between 100.8 and 103 degrees. The leukocyte count dropped to 12,000 and remained at that level during the remainder of the hospital stay. An electrocardiographic tracing was taken on March 17 which revealed a slight depression of ST<sub>1</sub> and ST<sub>2</sub>, a left axis deviation, but was otherwise normal. On March 20 the temperature rose to 105 degrees and the patient had two tonic and clonic convulsions. He was given 120,000 units of specific serum on that day and the dose was repeated on the following day. At this time a spinal puncture was done and 30 c.c. of turbid fluid were obtained which was under increased pressure. The fluid contained 230 mg. of protein and 13,000 leukocytes per cubic millimeter. Type VII pneumococci were isolated in the spinal fluid. On March 22 the patient was given

sulfapyridine because of the meningitis. He had had no other clinical evidence of meningitis than the two convulsions. He was given 50 c.c. of 2 per cent sodium sulfapyridine intrathecally on March 23 and this was repeated daily thereafter. The level of the drug in the spinal fluid was maintained between 10 and 12 mg. per cent and that in the blood between 7 and 16 mg. per cent. On March 26 he was comatose and developed opisthotonus and a facial nerve paralysis. Two days later his temperature was 107 degrees and he expired.

*Clinical Diagnoses:* Lobar pneumonia, pneumococcal meningitis, acute and chronic alcoholism.

*Anatomic Findings* (Dr. Martin Buehler): There was cyanosis of the skin and membranes. There was no edema or jaundice. The peritoneal cavity was negative. The liver was enlarged and extended 9 cm. below the right costal margin. Both pleural cavities contained fresh, fibrinous adhesions between the lung and the parietal pleura. The heart muscle was pale and soft and the chambers appeared to be slightly dilated. There were no myocardial scars. The heart valves were normal. The coronary arteries showed only minimal sclerotic changes. The right lung weighed three times and the left lung twice its normal weight. The posterior portion of the entire right lung and the left lower lobe showed gray hepatization. A purulent exudate could be expressed from the cut surfaces. The liver was increased in weight and showed fatty metamorphosis. The kidneys were negative save for cloudy swelling.

Examination of the head revealed marked congestion of the meninges. The subarachnoid space contained a large amount of thick, fibrino-purulent exudate. The convolutions were flattened. The ventricles were distended and contained pus. The cut surfaces of the brain appeared normal as did the large vessels at the base of the brain. The remainder of the organs were normal.

*Anatomical Diagnoses:* Lobar pneumonia, pneumococcus Type VII, pneumococcal meningitis, fatty metamorphosis of the liver.

#### Discussion

DR. FRANK C. ANDRUS: Microscopic sections of the lungs reveal characteristic changes of gray hepatization. The air sacs are filled with fibrin, pus cells, and pneumococci. The exudate compresses the capillaries producing a local anemia, thus giving the gray appearance. Sections of the meninges show a similar type of exudate. Due to the fibrin content, the exudate is very thick. I believe that it is reasonable to assume that this exudate had difficulty in passing from the ventri-

cles into the subarachnoid space, thus interfering with the escape of spinal fluid and producing the hydrocephalus and flattening of the convolutions. Sections of the liver show an increase in the amount of fat which has collected into droplets within the liver cord cells. This is the most common change we see in chronic alcoholics. It rarely produces any discernible interference with liver function except perhaps that related to the manufacture of antibodies. It is well recognized that individuals having fatty livers possess a markedly reduced resistance to infectious disease, particularly to pneumonia.

DR. MARTIN S. BUEHLER: In 1940 Neal reported thirty cases of pneumococcal meningitis treated with sulfapyridine and serum where available; ten of these recovered (three died within twenty-four hours after admission). There were ten positive blood cultures with six deaths and ten negative blood cultures with five deaths. The question was raised as to whether bacteremia could be considered as a necessary or causative factor. There was a focus in the ear or mastoid in seventeen of the thirty. The method of treatment consisted in the use of 2 per cent sodium sulfapyridine intrathecally (10 to 15 c.c.) after drainage, together with specific serum. Sodium sulfapyridine intravenously was also considered a good method of treatment. Specific serum intrathecally, 10,000 to 20,000 units with each spinal drainage, and 100,000 to 300,000 units intravenously was also used in some cases.

Coleman reported his experience with pneumococcal meningitis since the advent of sulfapyridine. He collected twenty-seven cases from the literature with nine fatalities. Sulfapyridine reduced the mortality from 100 per cent to 35 per cent and he concluded that specific serum was probably of no value. He also stated that, if the patient was going to recover, he would show signs of improvement within the first three or four days and that once improvement is noted, the patient will nearly always recover. The consensus of opinion in the literature is that the best prognosis in pneumococcal meningitis is found when the meningitis is primary, the prognosis being poorer when it is associated with a pneumococcal endocarditis or a massive consolidation.

Rhoads collected twenty-two patients with seven recoveries during a twenty months' period at the Cook County Hospital. Positive blood cultures were obtained in at least 50 per cent of the cases. His patients were treated with sulfapyridine or sulfanilamide administered early and in large doses along with specific serum up to as much as 600,000 units per day. During a three year period at the Cook County Hospital there were seventy-one cases of pneumococcal meningitis, 158 cases of tuberculous meningitis, 105 meningococcal, and 36 hemolytic streptococcal meningitis. Any type of pneumococcus can be the cause of meningitis.

Three main methods of treatment are used at the present time:

1. The most commonly used method is that of Finland at the Boston City Hospital. He gives sodium sulfapyridine intravenously until the spinal fluid level is 10 to 15 mg. per cent, which corresponds to blood levels of 15 to 20 mg. per cent, together with type specific serum intravenously up to 300,000 units or more. The sulfapyridine should be given intravenously daily during the acute stages. After the initial dose of intravenous serum, blood is withdrawn, allowed to clot, and the serum is then injected intrathecally after the removal of an appropriate amount of spinal fluid. This should be repeated daily until the spinal fluid remains sterile. We are thus injecting fresh human complement and antibodies directly into the spinal canal. The sulfapyridine should be continued for several days after the spinal fluid becomes sterile in order to prevent relapses.

2. After Flippant and Lockwood, Philadelphia General Hospital: Sulfapyridine orally and intravenously to maintain a constant blood concentration over 8 mg. per cent along with immune serum given intravenously.

3. Neal, Applebaum, and Jackson, New York City Department of Health: Intrathecal sodium sulfapyridine plus immune serum used intravenously in amounts of 100,000 to 300,000 units. Sulfapyridine should also be given orally. Ten to fifteen c.c. of 2 per cent solution of sodium sulfapyridine is mixed with 10,000 to 20,000 units of immune rabbit serum and injected intrathecally after each lumbar drainage. They do not believe that this concentration of sodium sulfapyridine will irritate or injure the meninges. We believe that there is some danger in administering sodium sulfathiazole intrathecally.

### Chemotherapy in Pneumonia

*Methods of Administration:* 1. Oral: Four grams as an initial dose followed by one gram every four hours until the temperature has remained normal for forty-eight hours, then continuing the drug approximately one gram every six hours for an additional twenty-four hours of normal temperature. The criterion of adequate dosage being the blood level, 4 to 6 mg. per 100 c.c.

2. Our present routine: 500 to 1000 c.c. of normal saline intravenously followed by 2 grams of the sodium salt dissolved in 100 c.c. of distilled water and then continuing with 1 gram of the drug every four hours by mouth in the same manner as mentioned under oral treatment.

3. Subcutaneous therapy: .3 to .7 per cent solutions of the sodium salts have been reported in the literature as being a satisfactory method but we have had no experience with it.

4. Rectal: Used as a 2 per cent solution of the drug. This is a poor method.

5. Intravenous: 500 to 1000 c.c. of normal saline intravenously followed by 2 grams of the sodium salt intravenously dissolved in 100 c.c. of distilled water and followed by 1 gram of the sodium salt intravenously every four to six hours as long as necessary.

6. Intrathecal: 10 to 15 c.c. of 2 per cent solution of the sodium salt is injected after the removal of a slightly larger quantity of spinal fluid. Whether this method should be used is still a debatable question.

I also wish to report our series of 233 cases of non-selected, routine, consecutive admissions of pneumonia patients to the Medical Service of the Minneapolis General Hospital between October 1, 1939, and April 1, 1941, in all of whom a specific pneumococcal type was obtained before therapy was instituted. The diagnosis was confirmed by x-ray and the patients were treated alternately with sulfapyridine and sulfathiazole as soon as the type of the pneumococcus was determined. There were 128 (113 lobar and 15 broncho) treated with sulfapyridine and 105 cases (85 lobar and 20 broncho) treated with sulfathiazole. The high incidence of lobar pneumonia in our series as contrasted with the predominance of bronchopneumonia seen in private practice during this same period can best be explained by the fact that almost all of our lobar pneumonias were easily typed whereas a considerable number of the bronchopneumonias failed to type and consequently were not included in our study. The average duration of the pneumonia before admission was about three and one-half days. Complicating conditions such as diabetes, hypertension, coronary sclerosis, heart failure, alcoholism, and senility were rather common. Fifty-



two of the 105 sulfathiazole cases fell in pneumococcal type groups one, two, three, five, and seven, whereas 69 of the 128 sulfapyridine cases fell in these same groups, the remainder being divided rather evenly among the other types. The total mortality in the sulfathiazole series was seventeen, but a number of the patients had had their pneumonia a week or more before admission or had a complicating condition which readily explained the death so that the corrected mortality could be reduced to seven patients in whom death could be considered as being due to a failure of the drug to control the pneumonia. The total mortality in the sulfapyridine series was nineteen cases; the corrected mortality twelve cases.

**Toxic Reactions:** In the sulfapyridine series there were fourteen patients who showed a slight drop of hemoglobin and one patient who showed a drop of 25 per cent. There were three patients whose leukocyte count dropped below 4,000. All recovered spontaneously. There were twelve patients whose polymorphonuclears dropped to below 50 per cent, the lowest being 25 per cent. In the sulfathiazole series, there were five who had a slight drop in hemoglobin and one a drop of 25 per cent. Four had a drop of the total leukocyte count to below 4,000, the lowest being 2,000; all of these recovered. In none of the patients in either series were the polymorphonuclears affected when the total leukocyte count dropped. There were seven patients in the sulfathiazole series whose polymorphonuclears dropped to under 50 per cent and there was one admitted with polymorphonuclears of 46 per cent who showed no further drop under eight days of treatment. Cyanosis, a decrease in hemoglobin, red blood cells, white blood cells, and polymorphonuclears were only moderate in our series but all of these should be closely watched as they may, on occasion, show a marked drop, in which case the drug should be immediately discontinued and the patient transfused.

Eighteen of the sulfapyridine patients showed microscopic hematuria; twelve had a gross hematuria (eight of these with an adequate intake and output); three developed an oliguria (under 500 c.c. per twenty-four hours). Two of them had a very poor fluid intake. One of them died in uremia with a possible sulfapyridine kidney. In the sulfathiazole series, there were nine patients who developed microscopic hematuria, three gross hematuria, one of whom had an adequate intake and output, and six who developed an oliguria, all with a poor intake and one of whom died with a possible sulfathiazole kidney. There were no cases of anuria, drug fever, or dermatitis in the sulfapyridine series. One patient in the sulfathiazole series developed anuria; she had a very poor fluid intake. She recovered after cystoscopy and irrigation of the kidney pelvis removed several grams of the drug from each kidney. There were four instances of dermatitis, three associated with a drug fever in the sulfathiazole series. Gross hematuria was three to four times as frequent with sulfapyridine, even in the presence of an adequate fluid output. This is usually an indication for stopping the drug. Urine output should be closely watched and maintained at 1200 c.c. or more per day. If this is done, there will, as a rule, be no gross hematuria with either sulfapyridine or sulfathiazole. The urine should be checked every two days microscopically for red cells as this may be a warning signal.

Oliguria and anuria may occur even in the presence of an adequate fluid intake and the urinary output must therefore be carefully checked. If the output falls too low, the drug should be stopped and the fluids forced. On occasion, it may be necessary to irrigate the ureters and renal pelvis in order to wash out the crystals of the drug and prevent an obstructive uremia. Sulfapyridine may precipitate in the kidney tubules while sulfathiazole usually blocks at the uretero-vesical junction but may also precipitate in and block the tubules. Sul-

fapyridine may form rather firm, non-opaque stones, composed mainly of the acetylated derivative, while sulfathiazole usually remains in the form of crystals of free sulfathiazole.

Dermatitis occurred in our patients only with sulfathiazole and it is reported as being much more common with sulfathiazole than with any of the other sulfonamids. This reaction should be closely watched for and the drug stopped at once if any skin rash appears, as it may be the forerunner of a more serious toxic reaction. The dermatitis usually occurs on the fifth to the ninth day and may be of almost any type. It is frequently associated with a rather sudden elevation of temperature (drug fever).

Sixty-seven of the 128 sulfapyridine patients developed some nausea and vomiting. In twenty-seven it was more marked and in three so severe that the drug had to be stopped orally. Twenty-one of the 105 sulfathiazole patients experienced nausea and vomiting; in six of them it was marked but in no case was it necessary to stop the drug orally. Sulfapyridine produced much more nausea and vomiting, resulting in the loss of the drug in the vomitus. In only a very few of our patients were we unable to control this by sedation, delaying the dose one hour, amphetel preceding the drug, or by mixing the drug with some well liked and tolerated food, such as jello or orange juice. Often one may see severe nausea and vomiting at first and then, within a day or two, the patient will become tolerant of the drug.

**Pneumonia Sequelae:** Cecil reports empyema to be the most frequent complication of pneumonia. In our series, only two patients developed empyema, both of whom had been treated with sulfapyridine; both recovered following rib resection. Pleurisy with effusion is the next most common sequelae. There were six in our series treated with each drug; eleven of these were sterile effusions. The one showing pneumococci in the fluid expired. We had one case of meningitis, cited above. It was surprising to note that we had but seven bacteremias, six of which occurred in the sulfapyridine series with two deaths.

### Summary

All pneumonias should be typed if possible so that specific serum can be given if necessary. Pharyngeal aspirations, gastric expressions, or mouse inoculations may be necessary in order to type the pneumococci.

Blood cultures should be taken routinely. If strongly positive or if three or more lobes are involved by the pneumonia, intravenous therapy with the sodium salt is advisable with the addition of specific serum.

If the temperature curve fails to show a definite downward tendency within twenty-four hours, the blood level of the drug should be checked as it may be too low either from poor absorption or marked acetylation. If low, the amount of the drug should be increased in its oral dosage; an intravenous dose or two may be given; or specific serum may be desirable.

Blood levels of the drug should be checked frequently so that if low more of the drug can be given, or if too high (where there may be an increased incidence of toxic reactions), the dosage may be decreased. The optimum blood level for pneumonia is 4 to 6 mg. per cent.

Sulfathiazole does not pass from the blood into the serous cavities and spinal fluid as well as does sulfapyridine, so that the latter is the drug of choice in such cases (as meningitis).

Sulfathiazole is the drug of choice in postoperative patients where it is desirable to avoid vomiting.

Obstetrical and alcoholic cases, because of their higher mortality, are treated best by a combination of specific serum and sulfonamid drugs.

## CASE REPORT

The fluid intake should be about 3,000 c.c. per day or sufficient to maintain an output of at least 1,200 c.c. per day in order to reduce the danger of renal damage or obstruction. Intravenous or subcutaneous fluids may be necessary in order to accomplish this. Consequently, the fluid intake and output should be charted so that they may be closely observed.

The sulfonamide derivatives may be used in patients having heart failure and a diuresis forced by the use of mercurial or xanthin diuretics.

The urine should be closely observed every day, not only regarding output but also for gross hematuria. Sulfathiazole often precipitates out in the urine forming a milky solution but there is little danger so long as the urinary output remains adequate. The urine should also be checked every two days for microscopic hematuria, which may be the forerunner of a serious toxic reaction.

The hemoglobin, leukocytes count and polymorphonuclears should also be checked every two days.

Intravenous therapy with the sodium salts is the procedure of choice in the very severe cases or in those with a low blood level either from poor absorption or loss by vomiting. When these drugs are given intravenously, it is best to use 2 grams for the first dose and then 1 gram approximately every four hours intravenously (for as long as it is necessary to give the drug in this manner), in order to maintain an adequate blood level, and at the same time eliminate the very high and then very low blood levels subsequent to larger doses spaced farther apart. Intravenous

solutions should not be over 3 per cent because of the very high pH.

### Conclusions

We were able to notice very little difference in the therapeutic value of sulfapyridine and sulfathiazole, the temperature drop and rate of recovery being very similar. There was no essential difference in the incidence of complications. There was also very little difference in the ability to reach and maintain an adequate blood level (4 to 6 mg. per cent) of the free drug.

We feel that these drugs, as of today, are a very definite advance in the treatment of pneumonia but believe that the final test of their true value will be the conquering in some year to come, of a very virulent strain of pneumococci which produces positive blood cultures.

DR. E. T. BELL: Dr. Buehler, would you recommend on the basis of this study that we use serum and chemotherapy or just the latter?

DR. BUEHLER: I would say that it is not necessary to use serum in the average case. We use the combined treatment in obstetrical patients and chronic alcoholics, and in patients who do not show a response to the chemotherapy in twenty-four hours. By that I mean, a fall in temperature during that period.

DR. BELL: Do you think, Dr. Buehler, that doctors should always determine the blood levels while administering these drugs?

DR. BUEHLER: I think that it is highly desirable and should be done whenever possible.

---

## CASE REPORT

---

### SULFAPYRIDINE IN CAPILLARY BRONCHITIS

ALDEN F. RISSE, M.D.

Stewartville, Minnesota

A girl two and one-half years old has had five attacks of capillary bronchitis, each following a mild upper respiratory infection. In each instance there were both fine and coarse moist râles throughout both lung fields, with fever and rapid respirations, and each inspiration consisted of a severe, jerky spasmodic contraction of the diaphragm. The first two attacks were quite severe, and it was necessary to administer oxygen in order to relieve the accompanying cyanosis. An X-ray of the chest during the first attack revealed no pulmonary consolidation. The attacks lasted five and four days, respectively.

The third attack was somewhat milder; at least there was no cyanosis, but on the third day of the illness there were signs of consolidation in the right upper lobe (bronchovesicular breath sounds). For this reason sulfapyridine therapy was instituted. The child was given one-half gram initially, followed by the same dose in four hours; then one-quarter gram every four

hours for twenty-four hours; and then one-quarter gram every six hours for three days. Within six hours from the time of beginning the sulfapyridine, not only had the temperature become normal, but the distressing, jerky breathing had stopped, and the respirations were quiet and normal; in fact, the patient was sitting up in bed and singing. Within twenty-four hours the râles had disappeared.

Since this time the child has had two more attacks of capillary bronchitis, and each time the symptoms and signs yielded to the same treatment, within twenty-four hours.

I have also had occasion to use the same treatment in the case of a boy, three and a half years of age, who was suffering from capillary bronchitis. The result was similar; the symptoms and signs had disappeared within twenty-four hours from starting the sulfapyridine therapy.

---

## HISTORY OF MEDICINE IN MINNESOTA

---

### HOMEOPATHIC AND ECLECTIC MEDICINE IN MINNESOTA\*

By James Eckman

Rochester, Minnesota

(Continued from June issue)

Homeopaths in Minnesota received sectional notice in 1880, when the Western Academy of Homœopathy convened in the hall of the Minneapolis Business College at 253 Nicollet Avenue. National recognition was accorded them in 1889, when the American Institute of Homœopathy met at the Hotel Lafayette at Lake Minnetonka on June 24.

Members of the Minnesota State Homœopathic Institute were not inclined to refuse to consult "regular" physicians as a matter of practice, but "regular" physicians were not supposed to consult homeopaths. At the twenty-seventh annual session of the Minnesota State Medical Society at Duluth in 1895, Dr. Edward E. Bigelow (1841-1926) of Owatonna remarked that sixteen years previously he had been called before the board of censors of his society because he had consulted a homeopathic physician. (Dr. Bigelow was elected to membership in the Minnesota State Medical Society in 1879). He thought that the vexsome problem that had brought him such obloquy should be clarified for all time, and he proposed to clarify it by urging adoption of his resolution:

RESOLVED, That it is the sense of the Minnesota State Medical Society that members thereof in the future be governed by their own judgment in meeting in professional consultation physicians of any school of medicine.<sup>19</sup>

Dr. Perry H. Millard (1848-1897) immediately moved that the resolution be tabled, which was done by oral vote.<sup>19</sup> The problem lost its importance as homeopathy declined in power, and before many years had passed there was no reason to fear that an allopathic physician would be associated with a homeopath in any professional alliance, however transitory.

Why the homeopath could not be a member of a regular medical society was explained by the *Northwestern Lancet*<sup>20</sup> in 1895:

It is quite commonly supposed that the rules of what is called the old school do not allow the practice of homœopathy, hydropathy, faith cure or any of the other special methods of treatment for each of which some sect is named. This is, of course, a mistake. There is nothing in the code of the American Medical Association to prevent any member who is so disposed from treating his patients with the highest homœopathic dilutions, from invoking the aid of the mind, of faith or even of the stars if he thinks fit to help the cure. Only he must not proclaim that he treats his cases by one method only, rejecting all others. That is where the objection to the homœopath lies as a member of the regular medical society.

Innocuous as such a controversy may seem today, in the eighties and nineties it was of profound moment. It affected the practice of medicine in almost every state in the land, and was particularly vexatious in the state of New York. In February of 1882 the New York State Medical Society adopted a code of ethics

widely divergent from that of the American Medical Association.<sup>21</sup> Purpose of this code was to allow "regular" physicians to consult "irregular" practitioners. The action of this state society blasted opinion in the United States like a thunderbolt. All eyes were on the American Medical Association; none could doubt that a powerful challenge had been flung at the parent body. In June of that year the national body was to meet at Saint Paul. From Cambridge, Minnesota, in his eclectic journal, the *Minnesota Medical Mirror*, Dr. Nereus M. Cook<sup>22</sup> (1852-1927) observed cautiously:

Let all classes of medical men recognize no code but right, and truth, and "schools" and "sects" will soon be obliterated. If the liberal spirit of the New York members is sanctioned, or the society is not reprimanded at Saint Paul at their meeting in June, the AMERICAN MEDICAL ASSOCIATION will have taken a step toward amalgamation, heretofore unknown. We shall hopefully wait to see what the day and the hour will bring forth.

As June approached, it became evident that the scheduled session of the American Medical Association at Saint Paul would be one of the most important meetings that body had had. On June 7, 1882, in Saint Paul, the Judicial Council of the American Medical Association handed down this decision:

Having carefully considered the Code of Ethics adopted by the New York State Medical Society at its annual meeting in February, 1882 (as furnished by the secretary of said society), the Judicial Council find in said code provisions essentially different from, and in conflict with, the Code of Ethics of this Association; and therefore, in accordance with the provisions of the Ninth By-law† of the American Medical Association, they unanimously decide that said New York Medical Society is not entitled to representation by delegates in this Association.<sup>23</sup>

Bitterness and recrimination were the fruits of this decision, even in "regular" ranks. In Minnesota the homeopaths were especially vocative. Dr. William E. Leonard harassed the "regulars" in his *Minnesota Medical Monthly*, and Dr. Henry C. Aldrich later took up the battle in the *Minneapolis Homœopathic Magazine*. Sessions of the state institute were fiery, characterized by incredible assaults on "old school medicine."

Minnesota homeopaths were keenly sensitive to such slashing attacks as the veteran editor and lexicographer, Dr. George M. Gould<sup>24</sup> (1847-1922), published in his *Medical News*:

... everywhere flourisheth faith-cure (that never cures); Christian science (that is unchristian and unscientific—to emesis!); the laying on of hands (that are dirty); spiritism (without spirit); spiritualism (without spirituality); Hahnemannism (either with or without the itch, the high potencies, the successions, the smelling of medicines, the divine *similia similibus*—either with or without, *comme vous-voulez!*); eclecticism (that chooses the follies); —pathies, —isms, and crankeries, that laugh at themselves and lunacies galore!

They exulted when they opened their copies of the *Hahnemannian* to read therein that Dr. Gould was "a tallow candle going out with a bad smell," "not honest," "not truthful," and that he "cringily begs for mercy."<sup>25</sup>

An important visitor to Minnesota and particularly Minneapolis and Saint Paul was Allen Corson Cowperthwaite, M.D., Ph.D., LL.D., F.S.Sc. (London), of Iowa City, Iowa. Once a student of the revered Constantine Hering (1800-1880), for whom a homeopathic medical college in Chicago was named in 1892, Dr. Cowperthwaite was born in 1848 and was graduated from the Hahnemann

†"No State or Local Medical Society, or other organized institution, shall be entitled to representation in this Association that has not adopted its Code of Ethics; or that has intentionally violated or disregarded any article or clause of the same."—*Transactions*, 33:629.



Medical College and Hospital of Philadelphia in 1869. In about 1878 he was elected dean of the State University of Iowa College of Homœopathic Medicine, which became extinct in 1919. He later became president of the American Institute of Homœopathy. He was much concerned with homeopathy in Minnesota, and apparently never was reluctant in extending his aid to supporters of the system in this state. Dr. Cowperthwaite was at one time editor of the *North-western Journal of Homœopathy*, and author of *A Textbook of Gynecology* and *A Textbook of Materia Medica*. He died of myocarditis in Los Angeles on March 1, 1926.

As the Minneapolis Homœopathic Hospital and the Minnesota Homœopathic Medical College gradually declined and merged into other institutions which themselves died out, homeopaths became less voluble, and also less numerous. Even in recent years homeopathic practitioners could be found who still clung tenaciously to the old doctrines and codices of homeopathy, but although determination was still stubborn, ranks were thinning. It is not easy to set a definite date for the extinction of a medical organization, for such groups ordinarily do not cease to exist by formal declaration. The Minnesota State Homœopathic Institute met in the fall of 1915 to hear an address by Dr. Henry C. Aldrich of Minneapolis, who had been elected president of the American Institute of Homœopathy in June of that year. In the *Journal-Lancet*<sup>26</sup> it was reported that the state institute met in 1923 and elected a complete slate of officers. Mrs. Glenn Matchan,<sup>27</sup> wife of a prominent homeopathic practitioner of Minneapolis, reported to the author that in so far as she could recall, Dr. Annah Hurd, a former secretary of the institute, placed all the papers of the organization in the hands of the Minnesota Historical Society in 1915, and that the society was dissolved in that year. Dr. Grace Lee Nute,<sup>28</sup> curator of manuscripts of the Minnesota Historical Society, reported to the author that "The records of the Minnesota State Homeopathic Institute were presented to the Society on October 21, 1933, and were given by Dr. Annah Hurd among the papers of her mother, Dr. Ethel E. Hurd."

In the *Journal-Lancet* of Minneapolis there are yearly allusions to the Minnesota State Homeopathic Institute to as late a year as 1923. It is possible that some sort of state homeopathic organization existed after extinction of the state institute. It may have been to such an organization that the *Journal-Lancet* referred.

#### Local Homeopathic Medical Societies

*Union Medical Society of Minneapolis and St. Anthony.*—The Union Medical Society was not a homeopathic organization. It is important to this paper only because the great homeopath of Minneapolis, William Huntington Leonard (1825-1907) was one of its founders. Ames,<sup>29</sup> in whose home the group which founded the society met, wrote that formation took place on June 20, 1855. He incorrectly referred to it as the "Hennepin County Medical Society," instead of the "Union Medical Society of Minneapolis and St. Anthony." Phillips<sup>30</sup> repeated Ames' error and perpetrated one of his own when he said that the society was founded in 1856: "The Hennepin County Medical Society was organized in 1856, a meeting for this purpose being held at the private residence of Dr. A. E. Ames . . ." Hamilton<sup>31</sup> clarified the obscurity surrounding the question when he demonstrated that the name "Hennepin County Medical Society" actually was assumed in March or April of 1869, the organization prior to that year having been called the "Union Medical Society of Minneapolis and St. Anthony."

When William H. Leonard helped to found the latter society in 1855 he was a so-called allopathic practitioner. He did not announce himself to be a homeo-

path until 1859 or 1860, but Hamilton<sup>31</sup> has shown that he was still a member of the Union Medical Society in 1862, in which year he was appointed to the Committee on Publications and the Committee on Disease of Respiratory Organs. Dr. Leonard's home at Fifth Avenue North and Second Street in Minneapolis was said to have been a favorite meeting place among members of the society, as was also Dr. A. E. Ames' house† at Fourth Street South and Eighth Avenue.<sup>30</sup>

*Southern Minnesota Homœopathic Medical Society.*—This organization had a very short existence. It was founded at Owatonna in October, 1871,<sup>6</sup> with Dr. J. M. (or I. M.) Westfall (1821-1889) of Rochester as president, and Dr. James Grant Gilchrist (1842-1906) of Owatonna as secretary and treasurer. In the second year of the society's existence Dr. Thomas Adams Pierce (1829-1905) of Winona was president, and Dr. Daniel Hough Roberts (1824-1910) of Owatonna was vice president and treasurer. After the meeting at Owatonna in 1871, a second meeting was held at Rochester on May 14, 1872. At the third meeting, in October, 1872, it was discovered that too few members were present to constitute a quorum; therefore, members "agreed to devote themselves to the Minnesota Institute."<sup>6</sup> This action presumably marked the disintegration of the pioneer medical society.

Members of the Southern Minnesota Homœopathic Medical Society, in addition to the officers previously mentioned, were Dr. Jacob M. Saunders (1816-1904) of Dodge Center, Dr. E. Cooley of Faribault, Dr. Edmund Beckwith (1836-1913) of Rochester, Dr. N. T. Williams and Dr. A. Williams of Saint Charles, Dr. Paul E. Denninger (1848-1927) of Eyota, Dr. J. Cosney of Saint Peter, Dr. E. C. Stacy of Albert Lea, Dr. Staunton B. Kendall (1808-1897) of Byron and Dr. Wilson Adolphus Allen (1834-1934) of Rochester. Dr. Cooley was one of the sixteen founders of the Minnesota State Homœopathic Institute at Saint Paul in 1867, but nothing more is known about him. The author consulted a resident of Saint Charles who had lived in the town for seventy-three years, but she could not remember either Dr. N. T. Williams or Dr. A. Williams of that village. Probably neither man was a Doctor of Medicine.

*Ramsey County Homœopathic Medical Society.*—This group, according to Veder,<sup>32</sup> was organized in February, 1872, by Charles Draper Williams (1812-1882), Thomas Chatterton Schell (1823-1883), Edward Walther (1835-1925), James T. Alley (1831-1878), Chester Goss Higbee (1835-1908), Heinrich von Wedelstaedt (1817-1900), and C. Wiegman. Dr. Schell was elected president at the founding meeting, Dr. Walther became vice president, Dr. J. B. Hall was secretary, and Dr. Williams was treasurer. Drs. Alley, Higbee and Wiegman were censors.

*Homœopathic Medical Society of Saint Paul.*—This was a dissident organization, founded in 1881 by former members of the Ramsey County Homœopathic Medical Society who for some reason rebelled against the parent society.<sup>32</sup> It continued to exist until 1887, in which year it was merged with the parent group in the interests of harmony. In 1889 the united Ramsey County Homœopathic Medical Society had twenty-five members and held meetings monthly. In that year Edward Walther was president and Eugene L. Mann (1861-1925) was secretary.

†When members of the Union Medical Society of Minneapolis and St. Anthony met at this residence they no doubt were properly awed, for Richard B. Eide (Minnesota History, 12:391-403, 1931) has shown that the edifice, erected in 1837, had thirty rooms, a large library, elaborately ornamented ceilings, a "beautiful slab of clouded granite" in front of the doors, and a "spacious veranda supported by fluted columns."

## HISTORY OF MEDICINE IN MINNESOTA

*Hahnemann Medical Society of Hennepin County.*—The Hamiltons<sup>33</sup> said that this organization was founded on September 16, 1872, at the office of Dr. William H. Leonard (1825-1907). Constitution and by-laws of this early society were signed by Dr. David Marcus Goodwin (1833-1908), Dr. Leonard, Dr. M. H. Wallens, Dr. George F. Flanders, Dr. T. Romeyn Huntington (1829-1873) and Dr. Petrus Nelson (1847-1910). Dr. Leonard became the first president of the group, and Dr. Huntington was secretary and treasurer. Meetings were held on the first Friday of each month in the offices of Dr. Goodwin and Dr. Huntington. In 1882 Dr. William Edwin Leonard (1855-1935) reported that the society had made the *Weekly Medical Counselor* of Chicago its official journal, and that the *Counselor* had published seven of eleven papers by Hennepin County homeopaths which had been sent to it. In 1884, as secretary and treasurer of the Hahnemann Medical Society of Hennepin County, Dr. W. E. Leonard said that the membership was twenty-seven, that the *Counselor* had published three of the society's papers, and that the *Minneapolis Tribune* had published one.

*Minneapolis Homœopathic Materia Medica Society.*—This group was said to have been organized in 1880. It was not incorporated. Meetings were held monthly. In 1908 T. F. Smith,<sup>34</sup> of the American Institute of Homœopathy, reported that he had received no response from this society in either 1907 or 1908, and it may be assumed that by the aforementioned years it was defunct.

*Minneapolis Homœopathic Medical Society.*—The Minneapolis Homœopathic Medical Society was organized in 1880, and was not incorporated. The annual meeting of this body was held in Minneapolis on the third Tuesday of each year. In 1908 it had forty-four members, had admitted two members during the preceding year, and had lost one by death.<sup>34</sup>

*Hahnemann Ward Association.*—This association was nonmedical in purpose; it was founded, probably before 1882, by Minneapolis women interested in the establishment of a homeopathic hospital in the city.<sup>35</sup> At first the association provided a "Hahnemann Ward" in a rented building at Ninth Street and Eighth Avenue South in Minneapolis; later it undertook to decorate, renovate and provide free beds in the building acquired by the Minneapolis Homœopathic Hospital in 1884 at 2446 Fourth Avenue South.

*Minnesota Alumni Association of Hahnemann Medical College and Hospital.*—This was an organization of which the purpose was wholly social. It was formed at Saint Paul on May 24, 1887, with Dr. John A. Steele (1837-1911) of Minneapolis as president and Dr. Benjamin H. Ogden (1860-1924) of Saint Paul as permanent secretary. The association convened at sessions of the Minnesota State Homœopathic Institute. It might be observed herein that in homeopathic circles, the Hahnemann Medical College and Hospital of Philadelphia was considered to possess the greatest prestige of any homeopathic medical college of the land.

*Saint Paul Clinical Society.*—This homeopathic group was organized in 1887 by physicians attached to the Saint Paul Free Homœopathic Dispensary at 181½ East Seventh Street, which was opened to the public on July 18, 1887. Subsequent history of this society is not known.

*Minneapolis Clinical Society.*—Aldrich<sup>36</sup> said that physicians of the dispensary staff of the Minneapolis Homœopathic Hospital founded this society at some time

after 1880. Interest lagged, but Dr. Abner L. Bausman (1834-1911), a dentist much revered by homeopaths, revived the society in 1885, and it became known popularly as "Dr. Bausman's Clinical Society." Members met in Dr. Bausman's dental office at 242 Nicollet Avenue, and it was said that homeopaths from all parts of Minnesota attended the meetings. Out of these meetings, according to Aldrich,<sup>36</sup> came the demand for the *Minnesota Medical Monthly* and the Minnesota Homœopathic Medical College, both established in 1886.

*Homœopathic Medical Society of Hennepin County.*—Aldrich<sup>36</sup> said that this organization was founded in October, 1892, and that it was incorporated in July, 1893. Members met on the second and fourth Wednesday of each month at the Minneapolis Public Library. In 1893 Dr. Henry C. Aldrich (1857-1922) was secretary and treasurer of the society.

*Saint Paul and Minneapolis Academy of Medicine.*—In the *Medical Argus*, published at first in Kansas City, Missouri, and later in Minneapolis by Dr. Frank Fisk Casseday (1856-1932), mention is made (1891) of the "Minneapolis and Saint Paul Academy of Medicine." The academy apparently was convened alternately in Minneapolis and Saint Paul in the nineties, and may have been formed in emulation of the "regular" Minnesota Academy of Medicine, founded on October 7, 1887, at the old West Hotel in Minneapolis, as Hamilton has shown.<sup>37</sup>

## References\*

19. Proceedings of the Twenty-seventh Annual Meeting of the Minnesota State Medical Society. Trans. Minn. State Medical Society, 1895. Saint Paul: Northwestern Lancet, pp. 5-13, 1895.
20. Editorial: Letting down the bars. Northwestern Lancet, 15:114-115, (Mar. 15) 1895.
21. Editorial: Jour. A.M.A., 2:158-159, (Feb. 9) 1884.
22. Editorial: A new departure. Minnesota Medical Mirror, 1:48-51, (Mar.-Apr.) 1882.
23. Minutes of the Judicial Council. Trans. A.M.A. Philadelphia: Times Printing House, 1882, pp. 60-62.
24. Editorial: Commercialism and the medical news. Med. News, 59:303-304, (Sept. 12) 1891.
25. Editorial: The morals and amenities of medical controversy. Med. News, 59:716-717, (Dec. 19) 1891.
26. News Items: Journal-Lancet, 43:284 (June 1), 1923.
27. MATCHAN, Mrs. G. R.: Personal communication to the author, date of October 11, 1940.
28. NUTE, G. L.: Personal communication to the author, date of October 16, 1940.
29. AMES, A. E.: A record, August 2d, 1870. N. W. Med. and Surg. Jour., 1:91-95, (Aug.) 1870.
30. PHILLIPS, EDWIN: Early days of the Hennepin County Medical Society. N.W. Lancet, 21:381-382, (Sept. 15) 1901.
31. HAMILTON, A. S.: History of medicine in Hennepin county. Minn. Med., 22:834-839, (Dec.) 1939.
32. VEDDER, O. F.: The medical profession. History of Saint Paul, Minnesota. Edited by General C. C. Andrews. Syracuse, N. Y.: D. Mason & Co., 1890, pp. 298-313.
33. HAMILTON, A. S., and HAMILTON, S. P.: The medical profession. History of Minneapolis: Gateway to the Northwest. Edited by M. D. Shutter, Chicago: J. S. Clarke Publishing Co., 1923, vol. 1, pp. 489-515.
34. SMITH, T. F.: Homœopathic organizations and institutions in the United States. Trans. Amer. Inst. Homœo., Sixty-fourth Annual Session Held in Kansas City, Mo., June 22, 1908. Cleveland, Ohio, the Committee on Publication, 1908, pp. 221-295.
35. Hospital Announcement. Minn. Med. Monthly, 1:161-162, (Oct.) 1886.
36. ALDRICH, H. C.: Homœopathy in Minneapolis. History of the City of Minneapolis, Minnesota. Edited by Isaac Atwater. New York: Munsell & Co., Publishers, 1893, part 2, pp. 916-934.
37. HAMILTON, A. S.: An historical survey of the Minnesota Academy of Medicine. Journal-Lancet, 45:229-240, (May 15) 1925.

\*References 1-18 appear in the June issue, page 479.



# President' Letter

## MEDICAL DEMOCRACY

A FEW weeks ago in conversation with a member of an association whose membership numbers many thousands, it was said that democracy was dead in this country, being especially noticeable in organizations of the type which we belonged to and represented.

I took issue with the statement at that time and three medical meetings which I have attended since then have convinced me more than ever that true democracy in medical circles is not dead, or even sleeping.

If "the shrine of liberty" is the "town hall," and the old fashioned caucus and conventions such as we knew in our youth were samples of true democracy, one has but to attend a meeting of the House of Delegates of the American Medical Association, the Minnesota State Medical Association, or again, a meeting of one of our up and coming county societies to see true democratic principles used in the conducting of meetings and carried out in the exchange of thoughts, to know that there is adequate hope for the survival of our democratic ideas, and that the democratic way of our fathers has not been lost.

However, there are two requisites needed to bolster up every organization: confidence in the present, and faith in the future.

The stars do not foretell a people's destiny, the hearts of men and women with self-sacrifice and courage work out the destiny of a country such as ours. Prosperity and happiness are the right of a free people; oppression, serfdom, and slavery the lot of dictator-controlled countries and societies.

If there are faults in our present political and medical setups, is it not better, rather than discard the present systems in their entirety, that we remedy some of their faults and make our present systems more workable?

In the next month the membership will have an opportunity to attend many district and special medical meetings. It is well for us to go to them with open minds tuned to the times in which we live and with a steadfast sense of responsibility for the success of each endeavor. As we give of ourselves, so will we receive.

There are no self-appointed dictators in national or state medical associations, that I know of. The strength of each lies in an active membership, not in one or two persons. Feel and see the obligation of your attendance by active participation in their deliberations.

B. J. BRANTON, M.D., *President*  
Minnesota State Medical Ass'n

## EDITORIAL

### MINNESOTA MEDICINE

OFFICIAL JOURNAL OF THE MINNESOTA STATE MEDICAL  
ASSOCIATION

Published by the Association under the direction of its Editing  
and Publishing Committee

#### EDITING AND PUBLISHING COMMITTEE

PHILIP F. DONOHUE, Saint Paul	THOMAS G. CLEMENT, Duluth
E. M. HAMMES, Saint Paul	O. W. ROWE, Duluth
H. W. MEYERDING, Rochester	T. A. PEPPARD, Minneapolis
WALTMAN WALTERS, Rochester	HENRY L. ULRICH, Minneapolis
B. O. MORK, JR., Worthington	C. L. OPPEGAARD, Crookston

#### EDITORIAL STAFF

CARL B. DRAKE, Saint Paul, Editor  
GEORGE EARL, Saint Paul, Associate Editor  
HENRY L. ULRICH, Minneapolis, Associate Editor

---

Annual Subscription—\$3.00      Single Copies—\$0.40  
Foreign and Canadian Subscriptions—\$3.50

---

The right is reserved to reject material submitted for editorial  
or advertising columns. The Editing and Publishing Committee  
does not hold itself responsible for views expressed either in  
editorials or other articles when signed by the author.

Classified advertising—five cents a word; minimum charge,  
\$1.00. Remittance should accompany order.

Display advertising rates on request.

Address all communications to Minnesota Medicine, 2642  
University Avenue, Saint Paul, or Suite 308, National Bldg.,  
Minneapolis. Telephone: Nestor 2641.

#### BUSINESS MANAGER

J. R. BRUCE

---

Volume 24      JULY, 1941      Number 7

---

### SULFAGUANIDINE

THE successful application of sulfanilamide  
and its well-known derivatives, sulfapyridine  
and sulfathiazole, to the treatment of infectious  
diseases has prompted clinical investigations with  
other chemically related compounds. Although  
it was recognized that the drugs accepted for  
general use had a wide range of therapeutic ac-  
tivity, there still remained the need for a more  
effective compound or compounds for the treat-  
ment of diseases of the intestinal tract. Experi-  
mental and clinical evidence now available indi-  
cates that sulfathiazole has more antibacterial ac-  
tivity against the colon-typhoid-dysenteriae group  
of microorganisms than either sulfanilamide or

sulfapyridine. However, further clinical investi-  
gations are necessary before final conclusion can  
be drawn concerning the therapeutic effectiveness  
of sulfathiazole in acute intestinal infections  
caused by these pathogens.

In 1940, Dr. E. K. Marshall, Jr., and his as-  
sociates announced the synthesis of a compound  
called sulfanilylguanidine. The Council on  
Pharmacy and Chemistry of the American Medi-  
cal Association has recommended that this com-  
pound shall be known as sulfaguanidine. Phar-  
macological studies with this drug revealed that it  
possessed an unusual type of activity in the  
animal body when administered by mouth. Al-  
though the solubility of the compound in water at  
body temperature was found to be around 200  
mg. per cent, absorption from the intestinal tract  
was much less than was anticipated. In other  
words, it appeared that appreciable concentra-  
tions of the drug could be maintained within the  
lumen of the intestinal tract without its being  
absorbed in large quantities and entering the rest  
of the body. The antibacterial action of sulfa-  
guanidine was also studied by the Johns Hopkins  
group. Appreciable activity was obtained against  
strains of *E. coli*, *E. Typhi*, *S. dysenteriae*  
(Shiga), *S. paradysenteriae* (Sonne, Newcastle,  
Flexner), and *V. cholerae*. Sulfaguanidine was  
found to be less effective against beta hemolytic  
streptococci, but equally as effective as sulfapy-  
ridine against pneumococci.

It was subsequently observed that sulfaguan-  
idine could be administered safely to human  
beings. The amount of drug absorbed from the  
intestinal tract is considerably less than that ob-  
tained with the other sulfonamide compounds. At  
the University Hospitals, as much as 24 grams  
in divided doses have been given every twenty-  
four hours to adults. The amount of the drug  
absorbed was ascertained by determining the  
blood concentrations. Levels as high as 6 to 7  
mg. per cent were obtained with these doses, but  
the quantities absorbed varied considerably from  
patient to patient. The compound appeared also  
as the conjugated form in the blood. The meth-  
od for determining the blood concentration is the  
same as described for sulfanilamide. The toxic

manifestations have been few. Occasional patients have complained of nausea. Rarely has the drug provoked vomiting. Marshall and his colleagues have observed drug fever, conjunctivitis, and mild hemolytic anemia following the administration of sulfaguanidine. It is apparent that the attending physician must use the same precautions in prescribing sulfaguanidine as have been emphasized for the other sulfonamide drugs.

Preliminary clinical studies have been reported by Marshall and his group concerning the use of sulfaguanidine in the treatment of acute bacillary dysentery. The recommended doses *per os* for children are as follows: 0.10 gram per kilogram of body weight as an initial dose, and then 0.05 gram per kilogram every four hours. When the number of stools is four or less per day, the dose is reduced to 0.1 gram per kilogram every eight hours for at least three days. The dose is the same in adults except when the drug is being given every eight hours. Then the dose is 0.05 gram per kilogram instead of 0.1 gram. Each dose may be given as a powdered suspension in water or milk. The drug has also been administered satisfactorily in tablet form. Approximately 60 per cent of the patients treated at Johns Hopkins Hospital showed marked improvement within a day or two. Similar results in the treatment of bacillary dysentery have been recorded by Dr. George M. Lyon of Huntington, West Virginia.

The status of sulfaguanidine in the treatment of typhoid and paratyphoid fever is not known. The drug is also being evaluated in the therapy of chronic ulcerative colitis, but no statement concerning its efficacy can be made at this time. This also applies to chronic carriers of the typhoid bacillus, although one favorable report involving one case has been made.

The fact that sulfaguanidine reduced the number of the coliform group of organisms in the feces of the mouse when given by mouth has been applied to prophylactic procedures in human beings by surgeons at Johns Hopkins Hospital. It should be emphasized that there is no experimental evidence that the compound will render the feces sterile. Since there exists the potential danger of peritonitis occurring in patients who have had surgical resections of the large bowel due to fecal contamination, it has been recommended that sulfaguanidine should

be given *per os* to these individuals for several days prior to the operation in order to reduce the number of bacteria in the fecal contents. Then if fecal contamination does take place at the time of operation, fewer bacteria will be dispersed within the peritoneal cavity. One schedule of doses used at Johns Hopkins called for 4 grams of sulfaguanidine every four hours for five days preceding the operation with the final dose being given the morning of the operation. As soon as possible after the operation, the same doses are given for five days. Another schedule has been the administration of 0.5 gram per kilogram of body weight every eight hours for seven days prior to the operation and a similar dose for seven days after.

In coöperation with Dr. O. H. Wangenstein, over twenty individuals have been prepared in this manner on the Surgical Services of the University Hospitals. In most of the patients it was impossible to administer the compound after operation because of the necessity of using suction drainage with an indwelling gastric tube. The operative procedures included resection of the colon and end to end anastomosis; the establishment of colostomies; the closure of colostomies with end to end anastomosis; and colectomies. It is exceedingly difficult to evaluate this form of prophylactic procedure. Many factors enter into the success or failure of this type of surgery. On the basis of our observations thus far, the prophylactic value of sulfaguanidine for abdominal surgery must still be established. In fact, the routine use of the drug for prophylactic purposes has been discontinued on the surgical services at the University Hospitals.

Now that sulfaguanidine has been accepted for general use by the medical profession, further evaluation in a larger number of cases is permitted. One is warranted in prescribing the compound for the treatment of acute bacillary dysentery. The results of therapy in patients with typhoid and paratyphoid fever, cholera, and chronic ulcerative colitis will be awaited with considerable interest, as well as the treatment of carriers of the typhoid bacillus. The prophylactic use of the drug in patients prior to certain operative procedures involving the large bowel remains to be evaluated.

WESLEY W. SPINK, M.D.  
University of Minnesota Hospitals.

### CONTRIBUTIONS TO THE DEVELOPMENT OF ENDOCRINOLOGY BY MINNESOTA PHYSICIANS

THE death of Sir Frederick Grant Banting recalls to mind some interesting sidelights concerning the development of endocrinology, and this in turn brings before us the part played by Minnesota physicians in its development.

All are familiar with the isolation of parathormone by Dr. A. M. Hanson of Faribault, and the studies of Dr. H. S. Plummer and Dr. E. C. Kendall concerning the thyroid gland are well known. Although in 1924 it was first suggested that patients with a certain symptom-complex might have hyperinsulinism, the first proven case, due to carcinoma of the islets of Langerhans, was that presented by Dr. R. M. Wilder and his coworkers of the Mayo Clinic. Dr. Henry Ulrich of Minneapolis, who had previously seen the patient, had suggested that an excess amount of insulin might account for the symptoms.

Concerning the discovery of insulin, Drs. Banting and Best gave credit to a paper written by a Minnesota physician for starting them on the experiments that eventually led to their success. This paper, entitled "The Relation of the Islets of Langerhans to Diabetes, with Special Reference to Cases of Pancreatic Lithiasis," published in *Surgery, Gynecology and Obstetrics*, 31:437, 1920, was written by Dr. Moses Barron of Minneapolis.

The work of Dr. A. T. Rasmussen of the Department of Anatomy, University of Minnesota Medical School, concerning the histology of the hypophysis, is well recognized, and the studies of Dr. Robert Meyer of the Department of Gynecology and Obstetrics, University of Minnesota Medical School, are of international renown.

The progress in the field of endocrinology in the past two decades has been phenomenal. While provincialism in medicine is to be decried, it is with justifiable pride that we recall these contributions to endocrinology by Minnesota physicians.

### SELECTIVE SERVICE

SELECTING the young men of our country for military service, and training them in military matters for the possible or probable contingency of war, is a stupendous undertaking. That the wheels of the Selective Service organi-

zation are revolving as well as they are is a tribute to democracy, and a proof that a representative form of government can meet a national emergency with concerted action. This was proven at the time of World War I and can be repeated.

Enough draftees have been examined to furnish a rough idea of the status of young men in our country. Although the physical requirements for induction are more rigid than they were for service in World War I, the percentage of draftees accepted is said to be about the same as in 1917.

Roughly, half of those examined have been accepted for full military duty. Approximately a quarter have been recommended for limited military service, while the remaining quarter have been rejected as physically unfit. So thorough are the examinations made by the induction board in an effort to avoid the mistakes made during our last mobilization, whereby the government became responsible for defects present before enlistment, that an additional 10 per cent of those examined by the induction medical boards have been rejected.

This rejection of draftees by the induction boards proves a hardship in many instances. The draftee approved on preliminary physical examination winds up his personal affairs preparatory to service and then is rejected. This inconvenience, which is often a hardship, could be avoided if actual service was not entered upon until a certain brief period following certification by the induction board.\*

The proposal to change the age group of those required to register to those twenty-one to twenty-eight, which has now been adopted, seems to be a proper move and likely to be less disrupting.

The problem of exemption and deferment is difficult to meet. It is the general opinion that all should be treated alike. Nevertheless, provision is made for exemption and deferment for certain individuals where this is to the benefit of national defense. Attention has recently been called by the Selective Service Headquarters to the importance of employers and employees cooperating with the draft boards in this matter of exemptions and deferments, not only when initial de-

\*Since this was written Lt.-Col. Richard B. Hullsiek has made recommendations to National Headquarters to correct this unnecessary hardship by having final examinations made at several centers in the state, actual induction to follow several weeks later. Ed.



ferment is indicated, but when renewal of the six months' deferment is desirable from the national defense standpoint.

Certification, exemption and deferment lie in the hands of local draft boards. These boards will of necessity vary in their interpretation of the best interests of national defense. While business as usual is out of the picture, policies which will not disrupt industry more than necessary are essential.

### MEDICINE'S LOSS

THE sudden death from coronary thrombosis of Mr. Jesse George Crownhart, executive secretary of the State Medical Society of Wisconsin, on June 5, 1941, while attending the annual meeting of the A.M.A. is a great loss to medicine. He had been one of the outstanding state secretaries in the country.

Mr. Crownhart was born in Superior, Wisconsin, October 8, 1896, the son of a Supreme Court Judge of Wisconsin. He graduated from the University of Wisconsin in 1921 and spent two years as a newspaper correspondent in the state legislature.

In 1923 Mr. Crownhart became executive secretary of the Wisconsin society and managing editor of the *Wisconsin Medical Journal*, which positions he held until his untimely death.

Mr. Crownhart's outstanding contribution to the medical profession was his book entitled "Sickness Insurance in Europe," written in 1938. In 1937 he had been sent to Europe by the Wisconsin State Medical Society to study governmental systems of sickness insurance and this book contained his report. The book had a wide distribution, containing as it did, an unprejudiced report of the systems of state medicine as he found them in the several countries he visited. Conclusions as to the adaptability of any of the systems to our country were rather left to the reader. The book threw much needed light on the workings of state medicine in Europe and still is a valuable piece of work.

Our sympathy goes to the profession of our neighboring state of Wisconsin.

## MISCELLANEOUS

### MINNESOTA DEPARTMENT OF HEALTH DIVISION OF PREVENTABLE DISEASES

#### Notice to Physicians Regarding Laboratory Work

Owing to reduction in state funds appropriated by the last legislature for the coming biennium, it is necessary beginning July 1, 1941, to reduce certain laboratory services offered by the Division of Preventable Diseases to physicians of the state. Careful consideration has been given by members of the State Board of Health, as well as members of our staff, as to elimination of laboratory work without injuring important services.

Changes in laboratory services beginning July 1, 1941, are as follows:

**Agglutination Tests** will be done on request consistent with diagnosis. Physicians are requested to fill in the diagnosis on agglutination data cards and request specific tests following this. The terms "all tests," "complete agglutination," and "complete serology," will not be interpreted as a specific request. In the absence of a definite or a tentative diagnosis, tests will not be done and blood will be held 3 days only for orders, as results of tests on blood held longer are not reliable.

**Important:** In submitting specimens for agglutination tests physicians are urged to fill out an agglutination data card. If a Wassermann test is also desired, a Wassermann data card should also be filled out and returned with the specimen in each instance. If examination is for food handlers, only typhoid and paratyphoid agglutination tests will be done. Weil-Felix tests will be done on request during tick season.

**Pneumococcus Typing:** Typing will be done only for the following and therapeutic serum furnished for same: Types 1, 2, 3, 4, 5, 7, 8, 14, and 19. Otherwise pneumonia service, including night service, will continue as before.

**Undulant Fever:** Blood cultures will be continued but animal work will be discontinued and culture work may be limited.

**Miscellaneous Work:** Miscellaneous tests having a lesser public health significance are to be discontinued. It is proposed to limit miscellaneous tests essentially to the following:

Blood smears to be examined for malarial parasites;

Blood smears to be examined for lead poisoning;

Blood smears to be examined for evidence of parasitic infection;

Blood cultures for typhoid and paratyphoid infection;

Stool specimens for parasites;

Various foods involved in outbreaks of food poisoning.

All other laboratory work will continue as before.

A. J. CHESLEY, M.D., *Executive Officer.*

# MEDICAL ECONOMICS

---

Edited by the Committee on Medical Economics  
of the

Minnesota State Medical Association

George Earl, M.D., Chairman

---

## NEW ISSUES: 1941

The changing social and economic picture in Minnesota is clearly indicated in shifting discussions of delegates and members of the Council in their annual deliberations.

Once the major subject of discussion was relief, or, as it used to be known, "care of the indigent."

Now the problem of relief, while acute in some scattered local areas, is on the way to satisfactory solution all over the state. Proper machinery for handling the problem has been set up and is functioning and it may be relied upon to find a workable solution for difficulties as they arise.

Former issues such as the much debated question of who should be responsible for medical expense for the needy poor have been settled by law as well as precedent. Also the issue involved in free choice of physician for the indigent or relief patient. Free choice is now established in the law, fortified by opinions from the attorney general and entrenched in regulations from the Division of Social Welfare.

If actual practice in some localities has not yet caught up to the law and regulations, time will undoubtedly correct the situation unless the normal evolution in such matters is upset by some radical social convulsion.

## Weighing New Forms

The problems which now confront the physician in his social rôle have shifted to an earnest effort to provide adequate medical service to the armed forces and also to the civilian population; to deal with health problems revealed by the first mass examination of young men since 1917 in the United States; to weigh new forms of practice, especially prepayment plans for medical service, in the light of the established principles of sound medical practice and adapt all that may suit the purpose of a more equitable and extensive distribution of adequate medical services, particular-

ly to low income groups; to continue to cope with disciplinary matters within the profession; to extend by demonstration and community programs, medically sponsored, certain established public health and disease control measures which promise large civic returns in terms not only of lives saved but of public funds conserved. Finally, to promote, by means of the National Physicians Committee nationally and by medical society effort, locally, a general public understanding of the facts in connection with the values and the methods and achievements of American Medicine.

## Discussed by Delegates

Delegates and members of the Council discussed these new issues exhaustively in a series of sessions, took definitive action on some, continued studies on others.

Following is a brief résumé of Council deliberations. It will be supplemented in an early issue by the complete proceedings of the House of Delegates of the association.

## Farm Security Plans

Two of the three counties selected for possible experimentation with the Farm Security Administration's cooperative plan for medical service to clients will give the project a one-year trial. They are Morrison and Ottertail counties. Itasca county physicians considered the plan and refused to accept it on any basis.

This plan which varies in detail from locality to locality provides in general for a pool of federal funds appropriated to farm security clients out of which costs of medical service will be paid. The experiment has the approval of the Council and the Committee on Low Income and Indigent Problems and will be watched with interest by all rural communities in Minnesota.

### Industrial Medicine

Approved for submission to the Editing and Publishing Committee was the suggestion made by Chairman J. L. McLeod of Grand Rapids of the Committee on Industrial Hygiene, that space be set aside in MINNESOTA MEDICINE for publication of pertinent new material on the various new aspects of industrial hygiene. With the development of industrial aspects of the defense program, industrial medicine will become more and more important to all physicians.

### Tuberculosis Control

Progress to date on the Meeker county tuberculosis control experiment, already launched by the Committee on Tuberculosis, was reported and approved. Two cases of active tuberculosis have already been discovered in patients who submitted themselves to the tuberculin skin test, voluntarily, as part of the project. One is a 16-year-old girl who showed no clinical symptoms of disease. The other is an elderly farmer suffering from an active infectious form of the disease.

Costs for this experiment, other than for medical service which is being contributed by Meeker county physicians, are being borne by the state association.

### Blindness Survey

Prevention of blindness is an objective of the Committee on Ophthalmology as well as of the Society for the Prevention of Blindness. Both will participate in a survey of blindness in Minnesota to be conducted under auspices of the society and Dr. F. E. Burch of St. Paul, officer and organizer. The proposal for the survey was submitted to the Council and approved. Thus an active effort to control conditions leading to blindness is added to a large series of comparable programs initiated or sponsored by the doctors of Minnesota. The list includes tuberculosis, vaccination and immunization, conservation of hearing, reduction of maternal and infant deaths, early diagnosis of cancer, control of diabetes.

### Political Coroners

One of the major political scandals among urban communities has been the conversion of the office of coroner to political purposes and the incompetence of many of the politicians who have occupied the office. The need for standard qualifications for the office was brought to the

Council last year and referred to the Committee on State Health Relations. The committee was commended for its active interest in the matter and instructed to be ready at the next meeting of the Council to make its report.

### Association History

Plans for publication of the history of the association which has been appearing serially in MINNESOTA MEDICINE were discussed and the dates to be covered by volume number I set. This volume will cover the history of the organization and of medicine in general in the state from pioneer days to 1900. A deadline of January 1, 1942, was set for submission of historical material from the county and district medical societies designed for this first volume. The historical committee was instructed to get in touch directly with all societies in the coming months to stimulate their interest in the work and see that all outstanding material is collected and prepared. Approximate estimates of costs are to be ready for report at the next Council meeting.

### Dues

One of the knottiest problems forced upon medical organizations by the departure for active duty of medical reserve officers, particularly of young officers in the grades of lieutenant and captain, has been the question of payment of dues.

It is recognized that a large majority of these officers are willing and glad to pay medical society dues continuously because of the importance of maintaining organization work and their standing in their own societies. Likewise membership carries with it special privileges wherever they may be stationed. It is also recognized that some young physicians who have recently entered practice and who are called to duty in the lower grades of commissions, may have difficulty in keeping up payment of dues. For these it was provisionally decided last December, pending full discussion by the House of Delegates and Council, that county societies should undertake payment either out of society funds or by special assessment upon members. All but a few societies concurred in this suggestion pending final action at this meeting.

Discussions were frank and unlimited and the resolution passed by the delegates was submitted for approval and final action by the council.

The result of this joint action has already been sent to secretaries of all societies for their guidance.

Briefly, it provides that dues should be paid for physicians called to military service in the grades of captain and lieutenant by their component societies, but that societies whose finances are seriously limited and who need help in discharging the obligation may apply to the council for assistance from state association funds.

The reasons behind this action are obvious. These are critical times for medicine, and not the less so because public attention appears to be focused upon defense preparations rather than internal social "reform." It is essential that all phases of the state association program continue, especially its educational program and the program of its Committee on Public Policy. Otherwise the men who are going into service now cannot be assured of satisfactory and sound conditions of work in their profession when they return. Also the public must be protected from precipitate and thoughtless withdrawal of essential freedoms in medical service in the name of defense and national security.

#### **New Chairman**

Election of Chairman H. Z. Giffin of Rochester to the office of president-elect left the post of chairman of the Council vacant at this session. To this important post, Dr. W. L. Burnap, long a member of the Council, a former president and delegate to the American Medical Association, was elected at this session.

The office carries with it grave responsibilities for interim direction of policies and finances of the organization and the faithful, enlightened and conscientious service of Dr. Giffin over his three-year term of office was rewarded with a resolution of appreciation and thanks by the Council. Hope was expressed that Dr. Giffin would remain in close association with the Council, in spite of the fact that his election to another office has automatically canceled tenure on any other office for the period of his service as president.

#### **Distinguished Service**

A resolution of appreciation and regret for the departure of another active member of the Council was voted to Dr. C. A. Stewart who left in June to accept the chair of pediatrics at the University of Louisiana. This resolution confined

itself to the distinguished services given by Dr. Stewart to the state association for many years and especially to his service on the Council, which was termed by fellow members to have been invaluable because of his wide knowledge, thoughtfulness and fairness in all matters.

Dr. L. A. Buie of Rochester succeeds Dr. Giffin as councilor of the first district and Dr. S. H. Baxter of Minneapolis succeeds Dr. Stewart in the sixth district.

#### **REPORT OF THE MINNESOTA DELEGATES TO THE 1941 A.M.A. MEETING AT CLEVELAND**

The scientific exhibits were extensive and most elaborate and one might spend the entire time of the convention studying them. Four to five movies were going on all day covering a wide variety of subjects. In the basement, below the main floor of the Auditorium, some 200 firms exhibited their goods.

The general subjects were discussed in another part of the Auditorium and the meeting places of the various sections were somewhat scattered, many of them being held in small Auditorium rooms.

In the House of Delegates, 168 out of 175 were present. The personnel of the House comprises not only representatives based on state society membership, but also has one member each from Hawaii, Canal Zone, Alaska, Puerto Rico and two from the Philippines. In addition, one each from the Army, Navy and Public Health Service. Also, the following specialties have one representative each:

- Practice of Medicine
- Surgery, General and Abdominal
- Obstetrics and Gynecology
- Ophthalmology
- Laryngology, Otology, Rhinology
- Pediatrics
- Pharmacology and Therapeutics
- Pathology and Physiology
- Radiology
- Nervous and Mental Diseases
- Dermatology and Syphilology
- Preventive and Industrial Medicine and Public Health
- Urology
- Orthopedic Surgery
- Gastro-Enterology and Proctology
- Anesthesiology

These various delegates are listed to demonstrate the democratic character of the House. All



## MEDICAL ECONOMICS

resolutions and reports are referred to appropriate Reference Committees appointed by the Speaker of the House, and the House votes on the report of the Reference Committees.

Dr. Fred Rankin of Lexington, Ky., was chosen as President Elect. The distinguished service medal was awarded to Dr. James Ewing of New York.

The A.M.A. is now ninety-five years old and numbers 119,000. The incoming president, Dr. Frank Lahey of Boston, stressed the necessity of getting the younger men interested in medical organization.

On account of the prevalence of tuberculosis among interns, the necessity of their physical examination prior to their assumption of duty was emphasized.

There was discussion about the payment to medical men for examination of draftees. This was referred to the Committee on Medical Preparedness.

The Federal Hospital construction bill at present is quiescent but may at any time be brought to life on the ground of the necessity of medical care for the migrant indigent, who in certain cases are federal and not state charges.

In a resolution presented by Michigan, the general practitioners requested recognition as an additional section but the resolution embodying this was returned to its authors. The House also rejected the request for a Certification Board for General Practitioners.

They approved the idea that the education of medical students be not interfered with, the general scheme being that those medical students subject to draft register as is customary and that their entrance into active service be then deferred until their education is completed. We must continue the training of physicians at our present level and standards.

They approved the idea of a Centralized Procurement Bureau for the Army, Navy, industrial work and civilian care.

Massachusetts has a state law about coroners and they introduced a resolution relative to autopsies. The House is to appoint a committee of three to study the relationship between medicine and the law and to set up a committee to make their findings available to state medical associations. This resolution was referred to the Board of Trustees for study.

The Judicial Council emphasized the lack of

uniformity among state medical associations in their classification of membership and they proposed to draw up standard specifications.

In order to have a wider geographic representation a Constitutional amendment was proposed to increase the membership on the Board of Trustees from nine to eleven. This lies over one year.

Michigan introduced a resolution of approval for a government hospital to be built for research and study of mental and nervous diseases, with special reference to epilepsy. The House disapproved this further encroachment on the private practice of medicine and the involved costs.

The history of the A.M.A. trial was read by Dr. Booth, chairman of the Board of Trustees, and the A.M.A. attorney, Mr. Burke, also discussed the matter and answered questions from the floor. The House approved Dr. Booth's report and voted to carry this case to the court of last resort.

The question of volunteer medical workers for foreign countries was referred to the Board of Trustees to formulate a policy.

The New York delegation sponsored a resolution for standardized tattoo on all people having serum sensitivity, the idea being if such an individual were rendered unconscious by an accident, that his attending physician might be forewarned that here was an individual who could not stand the administration of horse serum. This was not approved.

The request by the organized 8,000 women physicians for Army commissions in time of war was not approved after the Reference Committee had consulted with Army and Navy representatives. They stated it would necessitate Congressional action and would interfere with the present arrangements and is not in the best interest of the country. It was pointed out that the United States Public Health Service is open to them and that with the large number of physicians away from home, it was believed that their services could be used at home to better advantage than service with the troops.

Refugee foreign physicians are largely located in New York and are in this country in considerable numbers. The House referred this question to the Committee on Military Preparedness so that some form of work might be provided for them.

New York introduced a resolution that all

hospitals recognized for intern training should have as heads of the following departments:

- Pathology
- Anesthesiology
- Radiology
- Physical Therapy

men who hold certificates of membership issued by these various specialty boards. The House disapproved this resolution and there was a good deal of comment relative to the specialty boards. It was the opinion of the House that although originally the specialty boards were closely allied to the A.M.A. the trend has been to steadily lessen this alliance. It might be summarized by the question, Does the dog wag the tail or the tail wag the dog?

In commenting on the report of the Bureau of Medical Economics with reference to the prepayment for medical care, the House approved of the principle involved by the adoption of the following: (This is an extract from the report of the Reference Committee.)

It is recommended that the Board of Trustees take whatever steps are necessary to insure continuity of this important phase of the work of the Bureau to the end that there may be established some method of co-ordination and interchange of material pertinent to the administration of such plans in order that all state and county medical societies may profit thereby. It is further recommended that the House of Delegates reaffirm its belief that the principle of prepaid medical care justifies an experimental period during which time, advice and assistance be given to medical societies that elect to conduct such experiments under medical sponsorship.

A resolution was adopted to make the 1942 meeting in Atlantic City a Pan-American session and that Canada and the South American countries be invited to attend and participate in this meeting.

The House also recommended that the Board of Trustees be asked to establish a commission on Pan-American relations to advise on the various problems of Pan-American import.

- W. A. COVENTRY, M.D.
- A. W. ADSON, M.D.
- J. M. HAYES, M.D.
- F. J. SAVAGE, M.D.

#### NEW CLASSIFICATION

At the request of the War Department, questionnaires were sent to all state association offices recently, requesting that every physician in the state be classified by their county and district

secretaries, according to whether or not he could be spared from home communities for military service.

The difficulties involved in such an appraisal were obvious and protests were made by many states including Minnesota. At the direction of the Council, action on the request was held up until further instruction could be secured at the American Medical Association meeting.

Final instructions are simpler and less objectionable. They call for classification according to age. Every secretary of a component society has already been asked to separate the physicians in his county or district according to whether they are fifty-five years old or older. These questionnaires were sent to the secretaries in June and should be returned promptly to the state office.

#### MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. Du Bois, M.D., Secretary

##### Saint Paul Woman Given Four-Year Term for Abortion

Re: State of Minnesota vs. Grace Burke alias Billie Burke, whose true name is Theresa Agnes Burke.

On May 28, 1941, Mrs. Theresa Burke, 51-year-old St. Paul divorcee, was sentenced to a term of not to exceed 4 years at hard labor in the Women's Reformatory at Shakopee by the Hon. Hugo O. Hanft, Judge of the Ramsey County District Court, after the defendant had entered a plea of guilty to the crime of abortion.



THERESA AGNES BURKE

Mrs. Burke was arrested by the St. Paul police department on May 14, 1941, in her apartment at 603 Minnesota St., St. Paul, following an abortion she had performed on May 10 on a 27-year-old married woman who was delivered of still-born twins at Ancker Hospital May 12. Mrs. Burke had been paid \$12 for her services. Upon being questioned Mrs. Burke admitted having performed criminal abortions over a period of the past 9 years, most of them being for married women. The defendant has had no medical or nursing training and holds no license of any kind in the healing arts. She stated she formerly worked as a corsetière.

This case is the fourth successful prosecution in St. Paul in the past month and is conclusive evidence of the splendid work and coöperation by the St. Paul police department and particularly Lieut. Thomas Grace and also by the office of the county attorney of Ramsey County under Mr. James F. Lynch, who has personally handled all four cases.

**Saint Paul Woman Sentenced to Eight-Year Term for Abortion! Assistant Placed on Probation for Two Years**

Re: State of Minnesota vs. Georgiann Tennyson, also known as Ann Tennyson.

Re: State of Minnesota vs. Emma Redder.

On May 23, 1941, Mrs. Georgiann Tennyson, 52 years of age, was sentenced by the Hon. Hugo O. Hanft, Judge of the District Court of Ramsey County, to a



GEORGIANN TENNYSON



EMMA REDDER

term of not less than 2, and not more than 8, years at hard labor in the Women's Reformatory at Shakopee, following her conviction by a jury of the crime of abortion. Mrs. Tennyson received twice the regular sentence because of the fact that she had a previous conviction in 1928, for a similar offense.

Mrs. Tennyson was arrested on May 7, 1941, along with the defendant, Mrs. Redder, following an investigation by the St. Paul Police

Department and the Ramsey County Attorney's office into the circumstances leading up to the abandonment of a 6-day-old baby on the doorstep of Salvation Army's Booth Memorial Hospital in St. Paul. The investigation disclosed that the mother of that child had gone to Mrs. Redder about March 20, 1941, to have an abortion performed and Mrs. Redder had taken the mother to Mrs. Tennyson. Mrs. Tennyson attempted to perform a criminal abortion, but it was unsuccessful. Thereafter the mother consulted Peter J. Stolurow, who operated an orthopedic shoe store at 16 W. 6th St., St. Paul. Stolurow was also arrested for practicing healing without a basic science certificate and for abandoning a child at the Salvation Army Hospital.

Mrs. Redder, who is 48 years of age, entered a plea of guilty on May 12, 1941, to an information charging her with the crime of attempted abortion, and testified for the State as a witness against Mrs. Tennyson. Following Mrs. Tennyson's conviction and sentence, Mrs. Redder was sentenced by the Court to a term of not to exceed 2 years in the Women's Reformatory in Shakopee, but her sentence was suspended and she was placed on probation.

The Minnesota State Board of Medical Examiners wishes to commend the work done by the St. Paul Police Department and the County Attorney's office of Ramsey County in these cases. The defendants Tennyson and Stolurow are old offenders and neither of them has any respect for the laws of the State of Minnesota. Mrs. Redder undoubtedly deserved some consideration because of the fact that she testified for the State and did what she could to cooperate in making the facts known.

**Self-Styled Health Expert Found Not Guilty by Jury**  
Re: State of Minnesota vs. Russell James.

On June 10, 1941, a jury in the District Court of Hennepin County returned a verdict of not guilty in the trial of Russell James, 50 years old, of Glendale,

California, who was on trial on an information charging him with practicing healing without a basic science certificate. James was arrested on May 27, 1941, at the Wesley Temple Gymnasium, where he had been giving so-called free health lectures since May 12, 1941. In connection with his health lectures, which were free to the extent that a collection was taken up at each lecture, various so-called food products and diet lists were recommended for certain ailments including arthritis, rheumatism, thyroid trouble, nervous spasms, diabetes, glaucoma, spots before the eyes, bladder trouble, low blood pressure, high blood pressure, thrombosis of the heart, varicose veins, colitis and numerous other ailments. These so-called food products were sold for prices ranging from 50c to \$2.50, depending upon the article purchased and the amount.

At the trial James admitted that up until about 5 or 6 years ago he was a physical trainer and that he had never gone to any college and possessed no educational degree of any kind. He claimed to have learned about health from personal experience. He stated he worked for Health Science, a California corporation, and that this corporation obtained their so-called food products from the Live Food Products Co. of Burbank, California. Notwithstanding the fact that James laid great stress on the use of these products because of their vitamin content, he admitted that, of his own knowledge, he knew nothing about their content.

The Supreme Court of Minnesota has held that one who engages in such activities in the State of Minnesota is engaged in the practice of healing, and therefore needs a basic science certificate. This decision of the Supreme Court of Minnesota was followed by the trial court in James' case when it denied a motion by the defendant to dismiss the case after the State had submitted its evidence. The Minnesota authorities charged with the responsibility of investigating these cases, and with the enforcement of the healing laws of this State, intend to continue their investigation into the activities of these itinerant self-styled health experts, most of whom hail from California. If the evidence obtained indicates a violation of these laws, further prosecutions will be instituted.

**License of Minneapolis Physician Revoked for Criminal Abortion**

In the Matter of the Revocation of the License of Samuel R. Fraker, M.D.

On May 9, 1941, the Minnesota State Board of Medical Examiners revoked the license to practice medicine and surgery formerly held by Samuel R. Fraker, M.D., of Minneapolis. Dr. Fraker was charged with having procured, aided and abetted a criminal abortion on a 17-year-old unmarried Minneapolis girl. Dr. Fraker pleaded guilty on February 21, 1941, in the District Court of Hennepin County to an information charging him with the crime of abortion in connection with the same case. At that time he was sentenced to a term of not to exceed 4 years in the State Prison at Stillwater and the sentence was suspended for a period of 3 years upon Dr. Fraker's plea of illness and his request that he be given an opportunity to live with his daughter in Los Angeles, California. Dr. Fraker did not contest the revocation of his license.

Dr. Fraker's license as physician was previously suspended by the Minnesota State Board of Medical Examiners on November 4, 1938, for a period of 3 years for a similar offense. Dr. Fraker was born in 1870 in Pennsylvania, and graduated from the College of Physicians and Surgeons in Baltimore, in 1904. Dr. Fraker was licensed to practice medicine in Minnesota in 1916 by reciprocity.

PHYSICIANS LICENSED MAY 9, 1941

*April Examination*

Ahern, Gerald Steber—U. of Minn., M.B. 1939, M.D. 1940, Mpls. Gen. Hospital, Minneapolis, Minn.  
 Babb, Frank Shaleen—U. of Western Ont., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Brownson, Bradley Claude—Tulane U., M.D. 1937, Mayo Clinic, Rochester, Minn.  
 Cleaves, William Donald—U. of Minn., M.B. 1940, St. Luke's Hospital, Duluth, Minn.  
 Crosbie, Stanley, U. of Minn., M.B. 1941, 4053 Garfield Ave. S., Minneapolis, Minn.  
 Crowley, Daniel Francis, Jr.—U. of Iowa, M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Daugherty, Guy Wilson—Med. Col. of Va., M.D. 1937, Mayo Clinic, Rochester, Minn.  
 Fingerman, David Louis—U. of Minn., M.B. 1939, Mpls. Gen. Hospital, Minneapolis, Minn.  
 Foxworthy, Laurel Rae—Ind. Univ., M.D. 1939, Mayo Clinic, Rochester, Minn.  
 Gelbach, Philip Delmont—U. of Pa., M.D. 1939, Mayo Clinic, Rochester, Minn.  
 Grabow, John Jergun—Creighton U., M.D. 1938, 1820 Jefferson St., Duluth, Minn.  
 Graves, James Huntington—U. of Minn., M.B. 1940, Ancker Hospital, St. Paul, Minn.  
 Haavik, John Edward Thue—U. of Minn., M.B. 1940, Ancker Hospital, St. Paul, Minn.  
 Hall, Wendell Howard—U. of Minn., M.B. 1940, 224 W. 52nd St., Minneapolis, Minn.  
 Hallberg, Olav Erik—U. of Minn., M.D. 1940; Mayo Clinic, Rochester, Minn.  
 Hardman, Sue Colquitt—Johns Hopkins, M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Haserick, John Roger—U. of Minn. M.B., 1940, Ancker Hospital, St. Paul, Minn.  
 Heinz, Lawrence Henry—U. of Minn., M.B. 1940, St. Joseph's Hosp., St. Paul, Minn.  
 Hildreth, Allen Wesley—Cornell U., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Hilger, David William—Northwestern U., M.B. 1939, M.D. 1940, University Hospital, Minneapolis, Minn.  
 Hill, Allan Janney, Jr.—U. of Minn., M.B. 1939, M.D. 1940, 1408 S. E. 5th St., Minneapolis, Minn.  
 Hollenhorst, Robert Wm.—U. of Minn., M.B. 1940, Ancker Hospital, St. Paul, Minn.  
 Hopping, Richard Arundel—Long Island Col. of Med., M.D. 1939, Mayo Clinic, Rochester, Minn.  
 Jones, Reverdy Hamlin, Jr.—U. of Va., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Kaplan, Jack—U. of Minn., M.B. 1939, M.D. 1939, 1933 Fremont Ave. S., Minneapolis, Minn.  
 Kloos, Edward Karl—U. of Rochester, M.D. 1938, Mayo Clinic, Rochester, Minn.  
 LaBree, John William—U. of Minn., M.B. 1940, Ancker Hospital, St. Paul, Minn.  
 Lannin, Donald Rowe—U. of Minn., M.B., 1940, St. Luke's Hospital, Duluth, Minn.  
 Levinson, Julian Paul—Washington U., Mo., M.D. 1937, Mayo Clinic, Rochester, Minn.  
 Lundgren, Olive Anga—U. of Minn., M.B. 1940, 1607 Lowry Ave. N.E., Minneapolis, Minn.  
 MacArthur, W. J. Campbell—McGill U., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 MacKenzie, Ralph William—U. of Minn., M.B. 1940, 104 N. Miss. River Blvd., St. Paul, Minn.  
 Manlove, Francis Roxby—Temple U., M.D., 1938, Mayo Clinic, Rochester, Minn.  
 Marsh, Otis Milton—U. of Minn., M.B. 1940, Mpls. Gen. Hospital, Minneapolis, Minn.  
 Martin, Ann Lavinia—Cornell U., M.D. 1938, University Hospital, Minneapolis, Minn.

Marvin, Charles Peterson—U. of Minn., M.B. 1940, Ancker Hospital, St. Paul, Minn.  
 McEachern, Cecil Gray—U. of Western Ont., M.D. 1937, Mayo Clinic, Rochester, Minn.  
 McCuiston, Columbus Hal, Jr.—U. of Texas, M.D. 1938, Mayo Clinic, Rochester, Minn.  
 McKay, Donald Richard—Northwestern, M.B. 1940, Ancker Hospital, St. Paul, Minn.  
 Mears, Fredrick Blackburn—U. of Rochester, M.D. 1939, University Hospital, Minneapolis, Minn.  
 Movius, William Robert—Northwestern, M.B. 1939, M.D. 1940, University Hospital, Minneapolis, Minn.  
 Musselman, Florence Jane—U. of Wis., M.D. 1938, University Hospital, Minneapolis, Minn.  
 Nauth, Bernard Spencer—U. of Minn., M.B. 1941, Winona, Minn.  
 Olson, Ivy Bernice—U. of Minn., M.B. 1940, Asbury Hospital, Minneapolis, Minn.  
 Olson, John Donald—U. of Pa., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Pennoyer, James, III—U. of Rochester, M.D. 1939, University Hospital, Mpls., Minn.  
 Petersen, Robert Thorvald—U. of Minn., M.B. 1940, M.D. 1941, 1111 Nicollet Ave., Minneapolis, Minn.  
 Phillips, Spencer Kleckner—Northwestern, M.B. 1939, M.D. 1940, Mayo Clinic, Rochester, Minn.  
 Polley, Howard Freeman—Ohio State U., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Poore, John Chapman—U. of Minn., M.B. 1940, Trinity Hospital, Minot, N. D.  
 Radcliffe, James, Jr.—Yale U., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Ramsay, Beatty Haig—U. of Manitoba, M.D. 1940, University Hospitals, Minneapolis, Minn.  
 Rizer, Dean Kirby—Harvard U., M.D. 1938, 1931 Med. Arts Bldg., Minneapolis, Minn.  
 Ryan, James Doyle—St. Louis U., M.D. 1940, Fairfax, Minn.  
 Schilla, Fredrick Wm., Jr.—U. of Minn., M.B. 1940, Milwaukee Co. Hospital, Wauwatosa, Wis.  
 Schmitz, Robert Lenzen—U. of Chicago, M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Selin, Golden—U. of Minn. M.B. 1941, M.D. 1941, Glen Lake Sanatorium, Oak Terrace, Minn.  
 Smith, Frederick Harvey—U. of Western Ont., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Starekow, Milton David—Rush Med. Col., M.D. 1940, St. Joseph's Hospital, St. Paul, Minn.  
 Stone, Stanley Paul—U. of Minn., M.B. 1941, Ancker Hospital, St. Paul, Minn.  
 Swanson, Vincent Francis—Northwestern, M.B. 1938, M.D. 1939, 611 Delaware S. E., Minneapolis, Minn.  
 Tinney, William Scott, Jr.—U. of Pa., M.D. 1938, Mayo Clinic, Rochester, Minn.  
 Van Bergen, Frederick Hall—U. of Minn., M.B. 1941, R. No. 1, Hopkins, Minn.  
 Vines, Robert William—U. of Neb., M.D. 1937, Mayo Clinic, Rochester, Minn.  
 White, Raleigh R., III—Tulane U., M.D. 1939, Mayo Clinic, Rochester, Minn.

*By Reciprocity*

Nelson, Roy Arthur—U. of Chicago, M.D. 1939, Ferguson Falls, Minn.

*National Board of Credentials*

Cannon, Edward E.—Rush Med. Col., M.D. 1939, Mayo Clinic, Rochester, Minn.  
 Wells, Gideon Robbins—Harvard U., M.D. 1938, Mayo Clinic, Rochester, Minn.



**PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE**  
**Meeting of March 12, 1941**

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 12, 1941. Dinner was served at 7 o'clock and the meeting was called to order at 8 p.m. by the President, Dr. John M. Armstrong.

There were forty members present.

Minutes of the February meeting were read and approved.

The Secretary read a letter from Dr. Archibald Wilcox, presenting his resignation from the Academy. The Executive Committee recommended to the Society that Dr. Wilcox's name be placed on the Senior Membership list, and a motion was made, seconded and carried that this be done.

The scientific program followed, and consisted of a case report and a thesis.

**CARDIAC MYXOMA**  
**Simulating Subacute Bacterial Endocarditis**

MAX HOFFMAN, M.D.  
*Saint Paul*

Benign tumors of the heart have been reported on numerous occasions. Approximately 100 cases have been described. Most of these were myxomata located in the left auricle.

**Case History.**—This patient was a twenty-nine-year-old female, a physician's office assistant. Six weeks before she entered the hospital she began to have pain in the tip of the little finger of the left hand. She noticed a small, red, tender area in this region. A few days later she experienced pains in the end of the left big toe; and here also was present a small, tender, red area. Later, similar lesions appeared on the soles of the feet and in several fingers. She stated that early in the illness there were pains in the finger joints and often blanching of the fingers. At one time she had considerable distress because of a severe pain with cramps in her right leg. The only symptom referable to the heart was the discomfort due to tachycardia.

The past history was of no importance. There was no history of rheumatic fever.

While in the hospital she ran a temperature of 99° to 99.2° with a pulse rate of 90 to 110 per minute. Several small petechiae were present on the tips of the fingers and soles of the feet. These were red and tender and appeared exactly like the lesion of subacute bacterial endocarditis. The heart was not enlarged on percussion, but there was present at times a very distinct presystolic thrill and murmur. This was felt best when she was sitting up. Most of the time there was also present a systolic murmur in the apical region. On rare occa-

sions no murmur could be made out at all. The murmurs varied greatly in their quality and intensity. At this time there was no evidence of any congestion in the lungs, and the liver and spleen were not palpable. She had no dyspnea or orthopnea.

Daily examination of urine never showed showers of red cells, although at times there would be four to eight red cells per field. The hemoglobin was 75 per cent, and the leukocyte count ranged between 8,000 and 10,000 per cubic millimeter. Several blood cultures were sterile.

Because of the changing heart findings and the presence of petechiae, subacute bacterial endocarditis was considered as being the most likely diagnosis. The failure to secure a positive blood culture and the absence of fever cast little doubt on this diagnosis. The Libman-Saks syndrome was also considered.

She returned home and was fairly comfortable for about six months. The tachycardia still bothered her and she would at times have a little substernal pain and pressure. During this interval, there were only a few of the small, tender, red areas present.

Following what she described as an influenza she developed an acute digestive upset characterized by nausea, vomiting and diarrhea. The week after the onset of these symptoms she returned to the hospital. At this time the heart was enlarged in both directions. The varying heart murmurs were still present but not as loud. The liver was markedly enlarged, occupying most of the right abdomen and extending into the upper left abdomen. She complained a great deal about pressure in the abdomen and attempted to secure relief by kneading the lower ribs with her hands and by extending her back. There was no fluid present in the abdominal cavity. It was difficult to believe that this extremely large liver was due solely to passive congestion because of the absence of other signs of congestive heart failure.

The electrocardiogram showed a flattening of the T-wave in lead 1 and 2 and an inversion of the T in lead 4, and a marked right axis deviation was present.

At the end of two weeks she was markedly improved and was sent home. Two months later she returned with the same abdominal symptoms but complaining, also, of extreme weakness. A gastrointestinal x-ray showed the stomach and duodenum to be markedly displaced to the left. She felt fairly comfortable for about six days, and then began to complain of extreme weakness and shortness of breath which had come on rather suddenly after a good night's sleep. The heart at this time was fibrillating. She died a few hours later.

The postmortem examination by Dr. Kano Ikeda showed the following:

**Necropsy Findings.**—The body was that of a well developed, fairly well nourished, adult white female, 160 cm. in length and approximately 100 pounds in weight. Rigor was slight. Slight hypostasis of the dependent portions. Slight edema of the feet and ankles. No definite cyanosis or jaundice. The pupils were equal and 4 mm. in diameter. There was a right rectus scar about 9 cm. in length.

The subcutaneous adipose tissue was scanty in amount.

The peritoneal cavity contained approximately 500 c.c. of clear straw colored fluid. The liver border extended 11 cm. from the costal margin on the right side and 8 cm. from the xiphoid process in the midline. The appendix was absent. The diaphragm was at the 4th intercostal space on the right and the 5th intercostal space on the left.

Each pleural cavity was free of adhesions and contained approximately 50 c.c. of clear amber colored fluid.

The pericardial sac contained about 100 c.c. of clear straw colored fluid. It was distended.

The heart weighed 450 gms. It was globular in shape, dilated and in diastole. The epicardium was smooth. The myocardium was pale red, cloudy, swollen and soft. The mural endocardium was smooth. The valves showed no disease. The right auricle and ventricle were moderately distended. The circumference of the root of the aorta was 4 cm. The left auricle was filled with an irregular, lobulated, soft, yellowish translucent gelatinous mass, roughly 6x5x3 cm. when spread out. This was attached firmly to the posterior wall of the auricle at the lower border of the closed foramen ovale by a narrow base. The mass moved freely and obstructed the mitral orifice and orifices of the pulmonary veins. The root of the aorta showed a smooth intimal surface. The diameter of the ascending portion was approximately 1.5 cm. The coronary arteries were normal.

The right lung weighed 400 gms. The left lung weighed 350 gms. Crepitation was preserved throughout except in the dependent portions which were slightly edematous and congested. The cut surface showed the dependent portions containing a slightly increased amount of bloody frothy fluid. No areas of consolidation. The bronchi were clear. The pulmonary vessels were also clear.

The spleen weighed 200 gms. The capsule was smooth and stretched. The pulp was dark red and firm in consistency. The corpuscles and trabeculae were insignificant.

The liver weighed 1500 gms. The capsule was smooth. The surface was bluish brown in color. The cut surface showed the parenchyma pale golden brownish yellow and the centers of the lobules were quite prominent.

The gall bladder was normal. It was distended.

The gastro-intestinal tract was normal.

The pancreas and the adrenals were normal.

The right kidney weighed 120 gms. The left kidney weighed 150 gms. The capsules stripped readily, showing smooth brownish red surfaces. The cut surface

showed the markings fairly distinct. The organ was quite firm in consistency. The ureters and urinary bladder were normal.

The genital organs were normal.

The aorta showed no anomalies.

There were no enlarged lymph nodes.

The organs of the neck and head were not examined.

**Diagnosis.**—(1) Primary myxoma of the left auricle causing partial stenosis of the mitral orifice. (2) Dilatation of the right ventricle and auricle. (3) Chronic passive congestion of the liver, spleen and kidneys.

Microscopic examination of the tumor in the left auricle showed a lobulated surface lined with a single layer of endothelium and composed of loose, connective tissue fibers containing round, spherical and sometimes lobulated vesicular nuclei of varying sizes, in a loose semiliquid gelatinous stroma. Sometimes the fibers showed a typical appearance of branching, stellate myoma cells. Sometimes the nuclei were quite large and multinucleated. No mitotic figures. The appearance of the tumor was typical of that of myxoma.

The liver showed extreme degree of chronic passive congestion.

## Discussion

DR. C. N. HENSEL, Saint Paul: I feel this very interesting case which Dr. Hoffman has presented should not be passed without some discussion and perhaps a reference to points in clinical diagnosis. As Dr. Hoffman has stated, this tumor acted as a ball valve in the mitral orifice. In cases of mitral stenosis where a thrombus is formed in the auricular cavity, this occasionally breaks loose and rolls around freely in the auricular cavity, sometimes growing to considerable size and acting exactly like a ball valve as in the case of Dr. Hoffman's attached myxomatous tumor.

While studying with Dr. Wennkebach in Vienna, I saw two cases of mitral stenosis in which the diagnosis of ball valve tumor in the left auricle was made on a peculiar facies that the patients presented. Both these patients had markedly dilated port-wine colored vessels over the malar prominence of both cheeks which could be seen across the hospital ward, as well as a very marked bulging in the x-ray silhouette of the left auricle.

From previous autopsy experience, they were able to make an ante-mortem diagnosis on the x-ray silhouette and the facies. I am wondering if this patient of Dr. Hoffman presented this peculiar type of facies.

DR. A. M. SNELL, Rochester: Did the peripheral vessels in the extremities show anything characteristic?

DR. MOSES BARRON, Minneapolis: I would like to inquire about the mechanism of the enlargement of the liver in this case where the lesion was on the left side of the heart without much evidence of pulmonary congestion. Also, at the autopsy the liver weighed only 1500 grams, a weight which is entirely within normal limits, although the measurements as given were rather large.

DR. HOFFMAN: This woman did not present any unusual discoloration of the face or any telangiectatic changes. We did not do a biopsy of the petechial lesions. In answer to Dr. Barron's question, I don't know why this woman had this enormous liver. In examining her at the time she had the large liver,

she did not have much evidence of passive congestion in the lungs. The liver had become quite a bit smaller before she left the hospital. When she entered the hospital again later, the liver was not as large as before. We had no evidence at any time that the auricular tumor had obstructed the pulmonary orifice.

DR. HENSEL: Did you say this tumor could shift so it could block the pulmonary veins?

DR. HOFFMAN: In some cases it does, and then they have acute dyspnea. This patient at no time had paroxysmal dyspnea which would indicate that such blockage had occurred.

Dr. Wyatt, of Minneapolis, then read his Inaugural Thesis.

### INTUSSUSCEPTION IN INFANTS

O. S. WYATT, M.D.\*  
Clinical Assistant Professor of Surgery,  
University of Minnesota  
Minneapolis, Minnesota

Acute intussusception is looked upon as the outstanding dramatic incident which can occur within the abdomen of the infant. Curiously enough it usually happens to the well nourished and perfectly healthy baby. It strikes like "lightning out of a clear sky" and if not diagnosed early, and relieved, practically always ends in death.

I offer no apologies for again calling this subject to your attention, because the condition must always be kept fresh in our minds if we are to lower the mortality of this disease.

Intussusception is nearly always descending in character, although a few instances of the ascending type have been reported. The intussusception is usually single, occasionally is double, and rarely may be triple. Multiple intussusceptions are very rare. The invaginating portion of the intussusception is called the intussusceptum; the ensheathing portion, the intussusciens. The head is the most distal portion of the intussusceptum and the neck is the most proximal portion of the intussusciens.

The etiology of this condition is not at all clear, but several interesting theories have been advanced. Some observers believe that if the ascending colon and cecum retain their embryonic mesentery, resulting in a mobile cecum, the potential factor for an intussusception is present. Others feel that there may be some disturbance in the neuromuscular mechanism, producing improper peristalsis.

Perrin and Lindsay, reporting on over 400 cases, advance the theory that stimulation of some character results in hypertrophy of the normally abundant lymphoid tissue in the terminal inch or two of the ileum. This results in the ileocecal valve protruding still farther into the cecum. The mass, as a whole, then acts as a foreign body, the intestinal tract by hyperperistalsis tries to expel it, and the result is an intussusception. The fact that intussusception nearly always occurs in well nourished infants, and those

tending to be fat, lends support of this theory. Likewise the condition is rarely observed in poorly nourished babies or during epidemics of diarrhea. This, I believe, is the most rational theory that has been advanced regarding the etiology of intussusception.

Of course the presence of a tumor, hemorrhage, or diverticulum in the bowel wall may be the initiating factor for an intussusception. Occasionally the appendix may be the exciting agent.

Clinically all acute intussusceptions of infants can be divided into three types: (1) enterocolic; (2) enteric; (3) colic.

Any further differentiation is merely of academic interest. The name of each type is self-explanatory, but a few words regarding the frequency of the different types may be appropriate.

About 85 per cent of all intussusceptions are enterocolic in nature. This fact lends itself well to the theory advanced by Lindsay and Perrin. Probably 10 per cent of intussusceptions are enteric in type, and when such an intussusception is encountered search must be made for a predisposing cause. This may be a Meckel's diverticulum, a tumor of the intestinal wall, or a hemorrhage such as may occur in Henoch's purpura or hemophilia. Pathologic changes in the bowel wall may account for colic intussusception. However, this type is rare, occurring in only 3 to 5 per cent of cases.

The large majority (perhaps 85 per cent) of acute attacks occur in children under two years of age. Seventy per cent of cases occur in the first year of life, and fully 50 per cent of these take place between the seventh and eleventh months. Thus it is very apparent that we are dealing primarily with a disease peculiar to infants.

In intussusception the first and most important changes take place in the blood vessels. The mesentery undergoes tremendous stretching and the vessels become occluded. The veins are the first to be affected and the intussusceptum becomes edematous and swollen. If the intussusception is not reduced at this stage of its development the increasing pressure shuts off the arterial blood supply resulting in gangrene and necrosis of the invaginated bowel. During these pathological changes obstruction takes place, due to mechanical factors, and paralysis of the involved gut.

The mother, upon being carefully questioned, will give about the following history: Her perfectly healthy, well-nourished baby is suddenly seized with severe abdominal pain. Most mothers know exactly the time that this episode started, and are likewise aware that this pain is different from any colic which her baby ever had. During the attack the infant screams out, becomes pale, perspires freely, and in many instances presents the picture of shock.

If the infant is not in too severe shock he will frequently assume the knee-chest position during the attack of pain. Rodda feels that this is a very significant sign. Within a few seconds to a few minutes the pain passes away and the baby looks and acts normally.

A similar attack recurs in three to fifteen minutes and the victim goes through the same maneuver. The attacks of pain recur with a definite rhythm, and in

\*Attending Pediatric Surgeon Minneapolis General Hospital.

many instances an intelligent mother will remark that they simulate labor pains. During the first couple of seizures the infant may have a normal bowel movement. This is an evacuation of the rectal contents, but because it is normal, do not be deceived. The infant may vomit during the first attack or two, but early in this disease vomiting is not an outstanding symptom.

The shock phenomenon in intussusception presents an interesting study. Some infants will go into shock with the first attack of pain and never come out of it until the intussusception has been reduced. This type, I believe, represents the tight, severe, intussusception which can never be reduced by other than surgical means. Barium enemata may help in the diagnosis of this case but it will not be of any therapeutic value. Occasionally you will see an infant go into shock with the first few attacks of pain and within an hour or two come out of it. He will present good color, lie in bed sucking his fingers, perfectly happy, and not having any abdominal pain. Don't be misled by this picture and lulled into a state of false security. This baby still has an intussusception and the usual careful examination will reveal the tender mass. I do not believe that this intussusception can be reduced by a barium enema but of necessity requires surgical intervention.

On the other hand many babies will develop a so-called mild or loose intussusception and never present any evidence of shock. I imagine this is the type of case which, if seen within six to eight hours, can occasionally be reduced by a barium enema. This is usually the enterocolic type of intussusception and the absence of shock is probably due to the fact that the colon is primarily involved and very little ileum is involved. I feel that if we will study the shock pictures more carefully we will be able to tell if the barium method of reduction should or should not be attempted.

If seen within the first few hours the abdomen is normal in appearance and soft on palpation. In palpating the abdomen, you are of course trying to feel a mass. Several times in palpating the right lower quadrant I have been impressed with its emptiness. This sign, the French tell us, is characteristic of enterocolic intussusception. The sausage-shaped tumor for which you are searching is usually felt in the right upper quadrant or along the transverse colon above the umbilicus. Occasionally it may be found in the region of the splenic flexure or along the descending colon. The location of the tumor may vary between examinations. The shifting of the mass is due to the fact that the cecum and ascending colon have retained their embryonic mesentery, and therefore permit mobility of this portion of the gastro-intestinal tract, which normally is fixed. If you can get the mass between your thumb and fingers, and hold it until the infant has an attack of pain, you will feel the tumor definitely harden during the moment of terrific peristaltic action. If the tumor should be in the region of the hepatic flexure, and tucked up under the liver, in all probability you will not be able to palpate it. With the severe tenesmus and straining that these infants present, in the course of a few hours they will usually pass blood and mucus

by bowel. The blood is bright red and mixed with the mucus; such a passage is well named "the red-currant jelly stool."

Never omit a rectal examination in these infants. Frequently you will encounter a dilated rectum, which is a rather significant finding. If the head of the intussusceptum has advanced far enough you may feel it in the rectum. It feels like the cervix uteri on a vaginal examination. Occasionally you can palpate the tumor through the rectal wall. If you are unable to feel the mass through the abdominal wall, you should resort to a bimanual examination with the infant held in the upright position; occasionally you will be able to roll the tumor between the examining fingers. If the patient has not passed bloody mucus, sometimes on withdrawal of the rectal finger a gush of blood and mucus and practically no fecal material will follow. This feature is of considerable aid in the diagnosis. Always inspect the rectal finger closely for evidence of blood. If, after these procedures you have failed to demonstrate an abdominal tumor, then I feel you should resort to a barium enema and x-ray examination. I firmly believe that the barium and x-ray should be used as an aid in diagnosis and not as a method of treatment, the reasons for which I shall develop later.

Thus, the diagnosis of acute intussusception in infants is based on: (1) history and characteristic attacks of abdominal pain; (2) palpation of abdominal tumor; (3) blood and mucus passed by rectum.

Fortunately differential diagnosis is not particularly difficult, because there are so few conditions in infants which can simulate acute intussusception.

In acute colitis the pain is not severe and is more constant. The infant has fever, loses weight and it is usually days or weeks before blood appears in the stools. If the infection is very virulent, bleeding may be considerable and shock and even collapse may be in the picture. Intestinal obstruction is not present in this condition, and you cannot demonstrate an abdominal tumor. Be careful not to mistake the spastic colon for the mass of an intussusception.

Henoch's purpura will usually give evidence of bleeding elsewhere, which should be found by a thorough physical and blood examination. I have not had any personal experience with this condition. Recently, however, I had an experience with hemophilia which fortunately proved to be a simple obstruction rather than an intussusception.

Chronic intussusception is very rare in infants. All of the symptoms and findings may be present, but to a much less marked degree. The infants lose appetite and weight and never present shock unless acute obstruction is superimposed upon the chronic partial obstruction. The intussusception is likely to be much more extensive, but the pathological changes in the wall of the bowel are not so marked.

A variety of procedures have been used in the treatment of acute intussusception of infants. Hirschsprung and his contemporaries advocated deep narcosis and reduction by external manipulation. Only those not corrected by this treatment were operated upon, and naturally the surgical results were very poor.



Injection, by rectum, of water or air in conjunction with external manipulation was practiced by the Danish School. But here again many reductions could not be accomplished and operation proved necessary.

Occasionally you will see an infant in the home with the history and findings of an intussusception and during the ride to the hospital it reduces itself. The barium enema will reveal a very irritable colon but no other evidence of the intussusception.

In the past few years I have seen a number of cases in which barium has been used as a therapeutic medium. By that I mean a barium enema has been given under the fluoroscope, and by external manipulation the enterocolic intussusception has been reduced. This procedure is one of clear cut observation and in these cases provided a cure. After observing the first few instances of reduction accomplished in this manner I concluded that six hours was about the limit of time during which this procedure would be successful. Just recently, however, I saw an infant who had an intussusception unquestionably for sixteen hours which was satisfactorily reduced by a barium enema.

After such a manipulation the abdominal pain disappears at once in these infants, color returns to the face, they smile, are perfectly comfortable, and usually drop off into a peaceful sleep.

Now we are all well aware of the fact that this procedure has been condemned by many men as a dangerous method of treating intussusception, yet I feel that these cases must be reported and consideration given to this type of treatment. Some observers believe that if blood appears in the stool a laparotomy must always be done.

It is likewise appreciated by all pediatricians and surgeons that if the appendix has been caught in an enterocolic intussusception damage may occur to the meso-appendix resulting in an occlusion of the blood vessels. This will produce necrosis and perforation of the appendix resulting in peritonitis and death of the infant. This pathological process we are never able to estimate without direct vision and consequently run a grave risk with treatment other than operation.

All of these infants have been kept in the hospital for twenty-four hours' observation and if there is any return of symptoms they are operated upon at once.

This method of reduction should always be done with the aid of one who has had experience with the x-ray, preferably one who has had considerable experience with intussusception in infants.

I have made these comments on this particular type of treatment for purposes of discussion, hoping that the dangers of this procedure are well appreciated, and that it will not be attempted indiscriminately.

With your permission I should like to briefly report two cases which illustrate the dangers of using barium as a therapeutic agent.

An infant with a presumably enterocolic intussusception was given a barium enema with apparent reduction. Because of return of symptoms operation was resorted to fourteen hours later. Laparotomy revealed not an enterocolic intussusception but an enteric type which started back fourteen inches on the terminal

ileum and had never been reduced. This gut had received about as much insult as possible and still be viable.

Recently I saw a twenty-month-old baby boy who cried out with an attack of abdominal pain about 4 p.m. He had a few minor attacks between 4 and 6 p.m. but ate his evening meal, fell asleep and slept fairly well until 10 p.m. He then awakened with abdominal pain and vomited several times. The family pediatrician was then called but physical examination was negative except for a slight elevation of temperature. The child was uncomfortable but no abdominal mass could be found nor was there blood in the rectum. Rectal examination did present marked dilatation of the rectum, which was significant. By the process of elimination the tentative diagnosis was intussusception, but because of the paucity of physical findings a barium enema was resorted to. With a flat plate of the abdomen the roentgenologist made a diagnosis of intussusception with the head being at the hepatic flexure. This was confirmed with a barium enema. Pressure on the barium column reduced the intussusception to within a couple of inches of the ileocecal valve. Using as much pressure as we dared, complete reduction was impossible and consequently no barium ever entered the terminal ileum. Laparotomy revealed exactly what was visualized under the fluoroscope. The intussusception was enterocolic in type with the appendix looped around the terminal ileum and included in the intussusception. Gangrene was present in the terminal one-half of the appendix. Naturally, the appendix was removed to prevent necrosis, perforation and peritonitis.

These cases, I think, adequately illustrate the teaching of Ladd, Perrin, and Lindsay, who with their great experience maintain that barium should never be used as a therapeutic measure, and that the moment the diagnosis is made, laparotomy and reduction should be performed.

If the history is typical, and it is too early in the course of the disease for blood to be passed by rectum, or an abdominal mass cannot be palpated, then I believe that we are justified in using a barium enema for diagnostic purposes. If an anesthetic must be given in order to palpate the mass, and it is found, you should be prepared to go ahead with an immediate operation.

The safest anesthesia, from an all-round viewpoint, is ether given by open drop method.

Remember when you are operating upon these infants that they are usually in some degree of shock when they come to the operating table. Every effort must be made to conserve body heat and minimize operative trauma. Wrap the extremities and chest in cotton batting and place the baby on properly covered hot water bottles or electric pads. Keep the temperature of the operating room well above 80 degrees and never permit draughts in the room.

If a mid-right rectus incision is used, two-thirds of which lies above the umbilicus, in the majority of cases you will have the proper exposure.

When the peritoneal cavity is opened, guard carefully against intestinal outpouring. With one hand in the abdominal cavity locate as quickly as possible the intussusception, then gently bring the mass into the wound and under vision. I prefer to do all of the reduction under vision, so that if a tear takes place in the wall of the gut, it is seen and can be repaired at once.

The reduction must always be done by a gentle milking process and never by pulling. Sometimes, because of the marked constriction at the neck, the reduction may be difficult at the start. No pulling or tugging should be permitted for fear of tearing the bowel and producing a peritonitis. Once the reduction has actually commenced you will be surprised how easily the intussusception will unfold by merely milking in front of the head of the intussusceptum. The terminal three or four inches may prove difficult of reduction. Here particular patience and gentleness must be exercised. If the edema of the intussusceptum is marked, take a warm laparotomy sponge, encircle the entire intussusception and gently squeeze fluid out of the tissues. This procedure usually makes complete reduction possible. After reduction you must be able to identify the ileocecal valve, if you have been dealing with an enterocolic type of intussusception. It is much more simple to identify complete reduction in the enteric and colic types. No further procedure is necessary to prevent recurrence, as this practically never happens.

Dr. A. W. Abbott taught us years ago that after reduction of an intussusception we must never remove the appendix unless it is definitely inflamed or gangrenous. There are several reasons for this. In the first place because of the compromised condition of the circulation and the bowel wall the media is perfect for bacterial growth, peritonitis and death. Likewise the infant with intussusception has about all the load he can carry, and if you unnecessarily add to the operative procedure your little one goes into such profound shock that all measures to resuscitate him fail.

For the same reasons you must never remove a diverticulum or polyp at the original operation.

No matter what the appearance of the bowel may be never resect or do an enterostomy. It means death in practically 100 per cent of the cases. Frequently a questionable bowel, when returned to its normal environment, will survive.

If the intussusception is irreducible or, in your opinion, the bowel is not viable, presenting mesenteric thrombosis, then, according to the researches of Montgomery, the safest procedure is to do a lateral anastomosis of ileum to ascending colon, leaving the involved gut in situ. After completing the anastomosis place silk sutures about the neck of the intussusciens, holding the irreducible intussusceptum within the lumen of the bowel.

My experience with irreducible intussusception and gangrenous bowel has been so unfavorable that I have felt for some years that perhaps we should attempt some form of conservative management. Occasionally the four, five, or six-day-old intussusception is still reducible, and results in a cure. In view of this fact I believe that every late intussusception warrants a laparotomy and an inspection of the mass, if, in the judgment of the pediatricist and surgeon, the infant will tolerate such interference. Now, if the intussusception is irreducible or the bowel is definitely gangrenous may I be so bold as to advocate conservative management. This entails placing silk sutures at the neck of the in-

tussusception, holding the intussusceptum at this point within the intussusciens and getting out of the abdominal cavity quickly. Nasoduodenal suction is started at once to completely deflate the gastro-intestinal tract. Hypodermoclysis of normal saline or Hartman's solution is given several times daily in conjunction with a daily transfusion and intravenous feeding to maintain chemical and fluid levels.

The object of this procedure is to permit the infant to perform his own anastomosis and resection. Such self-cured cases have been reported in the literature and I think we should encourage such procedures in these desperate cases in the hope that we may save a few of these lives.

A patient was observed and treated in this manner recently at the Minneapolis General Hospital. Unfortunately the method was not afforded a fair trial because pneumonia was present on admission from which he succumbed on the ninth day. On the fourth day of his hospital stay the intussusception was recognized and conservative treatment was decided upon. His distention was entirely relieved by nasoduodenal suction, and he was given daily transfusions and intravenous feedings. On the seventh day he began to slough tissue by rectum, in other words, he was performing his own resection. Now the interesting findings about this case were revealed at the postmortem table. The peritoneal cavity appeared perfectly normal. There was absolutely no evidence of peritonitis, there was not one inch of distended bowel, and there had not been any perforation or leakage. The anastomosis had already been performed, and was quite firm. The resection of the intussusceptum had begun and I believe would have been successfully completed if the pneumonia had not been present.

In August of 1940 we had a five-months-old infant boy in the University Hospital who had an intussusception in July. He performed his own anastomosis and resection in a hospital upstate and was sent down to us to combat the dehydration and handle the feeding problem. One month later he is having normal bowel movements but still presents a mild intestinal obstruction. His general health is good and we anticipate complete recovery. Details of this case will be reported later.

This case with the self-resected portion of bowel, which we have, illustrates exactly what I have advocated above.

I cite these cases to recall to your attention what can happen, and also that we must always consider conservative management whenever we are faced with an irreducible intussusception or one that presents gangrenous bowel.

Speed, gentleness in handling tissues, and careful hemostasis is extremely essential when operating upon an infant with intussusception. Be ever cognizant of the grave shock induced by the disease and the operation.

Careful closure of the abdominal wall, layer by layer, is quite necessary. Plenty of stay sutures should be used in anticipation of a possible postoperative eviscer-

ation. Occasionally in the postoperative convalescence of intussusception poor healing of the wound takes place. Several times I have had the experience illustrated by the following case.

On the seventh day following operation on Allen R. for an intussusception, the stay sutures were removed and it appeared as though the wound was healing by primary intention. However, on the twelfth day, when the final stitches were about to be removed the infant cried, the wound gaped about one-half inch in the center, and a small portion of bowel presented in the wound. I thought the entire wound was going to break open and an evisceration take place. However, the wound was strapped tightly with sterile adhesive tape. Recalling the work of Lanman and Ingalls with vitamin C in wound healing, it was thought advisable to use ascorbic acid in this case. From the evidence which has accumulated it is concluded that vitamin C has an important rôle in wound healing. Consequently ascorbic acid was started on this infant, the first dose being given intravenously. It was given twice daily by mouth thereafter and in eight days the wound was entirely healed. At the end of fourteen days after vitamin C was started the wound did not even bulge upon crying, which certainly proved rapid and firm healing. After this experience, and in view of previous catastrophes I feel that ascorbic acid should be used routinely in our postoperative care of intussusception cases.

Always bandage the abdomen tightly and use a protective dressing to prevent wound contamination. After the patient is returned to bed, strap him to the bed, give hypodermoclysis and the usual treatment for shock. If there has been much blood loss a transfusion may be indicated.

As soon as the infant is conscious and able to swallow, fluids should be resumed by mouth. Normal feedings can be started after twelve hours. For the first forty-eight hours the temperature is usually high, due probably to the toxins absorbed from the edematous and damaged bowel wall; otherwise, the convalescence is smooth. I believe these infants should be kept flat on their back for fourteen days to assure proper healing and avoid a possible postoperative hernia.

The prognosis is good if acute intussusception is recognized and operation performed within twenty-four hours of the onset. Between twenty-four and thirty-six hours the outlook becomes only fair, after thirty-six hours poor, and beyond forty-eight almost hopeless. Hence, you will see that the prognosis, in this abdominal catastrophe of infants, is in direct relation to the time elapsing between onset and operation.

My plea is for an early diagnosis of acute intussusception and the institution of immediate surgical intervention in order to save the lives of these infants.

### Summary

1. Acute intussusception is the major catastrophe which can take place within the abdomen of the infant.
2. About 85 per cent of all intussusceptions occur in the first two years of life.

3. Types of acute intussusception are: (1) enterocolic; (2) enteric; (3) colic.

4. Diagnosis rests upon: (1) typical attacks of abdominal pain; (2) palpable abdominal tumor; (3) blood and mucus by bowel.

5. Routine administration of ascorbic acid during convalescence is suggested.

6. Conservative management of the irreducible or gangrenous case of intussusception is advocated.

7. Reduction should be accomplished by surgical intervention.

### References

1. Abbott, A. W.: Early diagnosis of intussusception in children under three years of age. *Journal-Lancet*, 36:319, 1916.
2. Beavens, P. W.: The occurrence of chronic intussusception in young children. *Am. Jour. Dis. Child*, 37:372-78, 1929.
3. Ladd, W. E., and Gross, R. E.: Intussusception in infancy and childhood. *Arch. Surg.*, 29:365-84, (Sept.) 1934.
4. Montgomery, A. H., and Mussil, J. J.: The treatment of irreducible intussusception in children. *Surg., Gyn. and Obst.*, 51:415-19, (Sept.) 1930.
5. Perrin, W. S., and Lindsay, E. C.: Intussusception. A monograph based on 400 cases. *Brit. Jour. Surg.*, 9:46, 1921-22.
6. Rodda, F. C.: Intussusception. *Minn. Med.*, 16:405, (June) 1933.
7. Walton, A. J.: Intussusception. *Practitioner*, 87:186, 1911.

### Discussion

Dr. F. C. RODDA, Minneapolis: I am pleased to have the opportunity to discuss Dr. Wyatt's paper because intussusception was the subject of my own thesis for admission to this society. Further, I want to compliment Dr. Wyatt for the contributions he is making to surgery of the infant. I wish also to pay tribute to Dr. Amos W. Abbott who made such careful bedside observations on intussusception. His paper, given before the Western Surgical Society, was published in the *Journal-Lancet* in 1916. This paper is a classic on the symptomatology and diagnosis of intussusception.

I have a unique report of three cases of intussusception, involving two children in the same family, within a period of one year which illustrate most of the points emphasized by Dr. Wyatt.

*Case 1.*—S. W., a female, one year of age, an only child, was seen in consultation August 10, 1939. The history was of sudden pain, the child screamed out, became pale, perspired freely. Presently a normal stool was passed. Then followed recurrent attacks of pain in which the child assumed the knee-chest posture. Some hours later bloody mucus was passed. She was treated for colitis. When seen four days after the onset she was in collapse—the abdomen was so distended palpation was not feasible. A diagnosis of intussusception was made. Operation revealed a gangrenous mass of double intussusception involving about two feet of the bowel. Death followed promptly.

In this case, although there was a typical history, the attending physician had not thought of intussusception, and the patient was operated upon too late.

*Case 2.*—July 9, 1940, eleven months after the above incident the same father phoned me stating he had another baby which surely had intussusception.

R. W., seven months of age, suddenly cried out with pain, became pale, perspired (shock), vomited once, then had recurrent attacks of pain lasting one to two minutes, repeated every ten to fifteen minutes, during which he assumed the knee-chest posture and strained as at stool. A sausage shaped mass was felt midway between the hepatic and splenic flexures of the colon. Rectal examination revealed clotted blood. A barium enema given about three hours after onset was tem-

porarily arrested at the site of the tumor, then proceeded to the ileocecal valve. The mass disappeared, pain ceased, the child relaxed and after two days' observation in hospital the child was discharged. He was eating well, having normal stools.

In this case the symptoms were so clear that the father was able to recognize the condition. Efficient reduction was accomplished with a barium enema.

*Case 3.*—On August 28, 1940, about seven weeks after the above incident, the same father phoned that the same child was again the victim of intussusception.

R. W., now about nine months of age, experienced a sudden onset of pain followed by shock, vomited, then had a recurrent attack of pain, and assumed the knee-chest posture. A sausage shaped tumor was palpable in the region of the mid-transverse colon. Rectal examination was negative. Again, about two hours after the onset, a barium enema was given which was arrested at the site of the tumor and did not proceed beyond that point. Specks of blood appeared in the barium solution when it was passed. Within an hour Dr. Wyatt operated on the child, found the mass, reduced it readily, left the appendix alone. He made a prompt recovery and has remained well since.

In this case the father was again able to make the diagnosis. Attacks of intussusception are truly typical. The barium enema confirmed the diagnosis but did not avail in reducing the intussusception. Early resort to surgery, easy reduction with speedy recovery, no recurrence, perhaps because of adhesions, following the operation.

The Danish physicians, Koch and Oerum, report on 400 cases of intussusception treated by their "Bloodless Method" which consisted of chloroform anesthesia, taxis and an enema of 500 to 1000 c.c. of water. Their mortality rate was 35 per cent. Their surgical treatment gave a mortality rate of 75 per cent but this was unfair to surgery since it was not called upon until after the manipulations of their bloodless method.

We have reduced a goodly number of intussusceptions with a simple barium enema given gently, that is, with little pressure. We have chosen cases involving the colon, of short duration and not attended with severe shock. Also we have held the patients under close observation for several days because the factors of the status of the appendix, multiple sites, circulation of bowel cannot be determined.

In the irreducible cases with gangrenous gut I am much indebted for Dr. Wyatt's suggestions. Not a single patient of ours in whom resection of the bowel has been done has recovered. With our newer methods of supplying fluids, food and vitamins parenterally and

the use of Wangenstein's technique of nasal suction we surely should have better prospects without surgery than our attained mortality of 100 per cent with resection.

Dr. E. J. HUENEKENS, Minneapolis: It is difficult to add anything of importance to this excellent presentation of Dr. Wyatt's and the able discussion by Dr. Rodda. From a pediatric standpoint, I am interested primarily in the diagnosis of intussusception. Coming out of a clear sky, the sudden onset of pain is so characteristic that I have been able to make a diagnosis over the telephone from the description given by the mother. In the earlier stages some of these cases are considered to be dysentery because of the bloody mucus evacuated from the bowels. An important difference is that in intussusception, after the lower bowel has been emptied of its contents, from then on there is absolutely no fecal matter in the bowel discharges, nothing but blood and mucus. If, after careful consideration, it is difficult to determine with certainty whether or not intussusception is present, it is better to make an exploratory incision than to wait even a short time to confirm the diagnosis. Even a few hours may be too late to save the patient.

Dr. ARNOLD SCHWYZER, Saint Paul: I remember that sometimes we have held these children up by the ankles, let the head drop down, and given the child an ordinary plain water enema by gravitation. Barium enemas are all right where one has help in the hospitals, but years ago I have seen results from the other method with a water enema. This can be carried out in the country practice.

When a case comes to surgery, there is one very important thing we should not forget. These children have feculent vomiting and, before operating, one should be sure to clean the stomach out; that is very important and should be emphasized.

By the way, the lower right quadrant is usually the most empty spot in the abdomen and down there you don't feel anything.

I have seen intussusception recur. When you have a recurrent intussusception, what are you going to do?

In those cases it is advisable to sew the lowest ileum loop to the ascending colon, to get a double-barrel effect. If one chooses, a catgut may fix the cecum in the iliac fossa. In one case of ours there was much edema and we tore the gut a little, but the child got well anyway.

The meeting adjourned.

E. V. KENEFICK, M.D.,  
Secretary

### Phenytoin Sodium (Sodium Diphenyl Hydantoinate)

The Council on Pharmacy and Chemistry has adopted the designation "Phenytoin Sodium" (accented "phén-y-tōin sodium") as a nonproprietary name for sodium diphenyl hydantoinate. Acceptance is continued of Dilantin Sodium, the proprietary name under which Parke, Davis & Co. markets its brand of this product. (*Jour. A.M.A.*, May 3, 1941, p. 2019.)

### Sulfadiazine and Sulfaguanidine

The Council on Pharmacy and Chemistry has adopted the term sulfadiazine for 2-sulfamido-pyrimidine and the term sulfaguanidine for sulfanilylguanidine. The latter term was adopted after consultation with Dr. E. K. Marshall, Jr., who kindly expressed his assent to the Council's recognition of the term. (*Jour. A.M.A.*, May 3, 1941, p. 2019.)



## TRANSACTIONS of the MINNEAPOLIS SURGICAL SOCIETY

Stated Meeting, Thursday, March 6, 1941

President, JAMES A. JOHNSON, M.D., in the Chair

Secretary, R. F. McGANDY, M.D.

### ACUTE SPINAL EPIDURAL ABSCESS\*

#### Report of Case

HAROLD F. BUCHSTEIN, M.D.

Minneapolis

Dandy (1926) was the first to direct attention to the fact that acute pyogenic infections within the spinal epidural space produce a characteristic clinical syndrome which permits their distinction pre-operatively from other intraspinal lesions. Such recognition is of more than academic interest since these lesions constitute a real surgical emergency.

Pyogenic infections of the spinal epidural space may result from the direct extension of an adjacent lesion, such as a carbuncle or perinephritic abscess. More commonly, however, they arise by hematogenous metastasis from a distant focus of infection. Cutaneous lesions, such as furuncles, paronychia and infected blisters are the most frequent sources of the infection. Less commonly, infections of the paranasal sinuses, the respiratory passages or the teeth may be responsible. Many such metastatic epidural infections follow minor trauma to the region of the spine, which is then presumed to have created there a focus of lowered resistance in which a septic embolus lodges. The infecting organism is most often the staphylococcus.

Metastatic spinal epidural infections appear to occur more frequently than the brief comment they receive in most surgical texts would suggest. During the course of a year I have had occasion to operate upon two patients with such infections, one of whom is here reported.

A young married woman of nineteen years was in the fifth month of her first pregnancy when she was found to have a cystic ovarian tumor. Removal was advised, for which purpose she was admitted to the Gynecological Service of the Minneapolis General Hospital.

The patient had considered her general health to be good and she had had no previous operations. Physical examination, aside from the pelvic examination, disclosed nothing of note. Routine laboratory studies of the urine and blood gave findings within the limits of normal aside from a mild anemia, the hemoglobin content of the blood being 65 per cent of normal. A complement fixation test for syphilis was negative and no Neisserian organisms were found in a cervical smear.

Laparotomy was performed on June 5, 1940, under spinal anesthesia. Difficulty was encountered in entering the vertebral canal, repeated withdrawals and reinsertions of the needle being made, all in the same interspace. Eventually the dura was pierced and the drug (metycaine, 125 mgm.) was injected. Satisfactory anesthesia was produced and the operation was completed

without further untoward incident, a large ovarian cyst being removed.

The patient's wound healed promptly and she was afebrile and comfortable upon being discharged from the hospital on the tenth postoperative day. Three days later she developed low back pain which became progressively more intense and which presently radiated in girdle fashion about her lower abdomen, just above the inguinal ligaments. Straining and bearing down intensified the pain. Subjective numbness was noted in the left foot.

Upon readmission to the hospital on June 20, 1940, the patient appeared acutely ill. Her temperature was 101° F. and varied between 99° and 103° on succeeding days. Her abdominal wound was found to be well healed and no evidence of inflammation was found on pelvic examination. Exquisite tenderness was noted over the lower lumbar spine and the patient complained bitterly of low back pain. Daily urinalyses showed only a trace of albumin and a few pus cells per high power field. The blood contained 61 per cent hemoglobin and the erythrocytes numbered 3,300,000 per cubic millimeter. The blood leukocyte count was 25,350 per cubic mm., 94 per cent being polymorphonuclear forms. The blood sedimentation rate was 144 mm. in one hour. Cultures from the throat and from the uterine cervix gave no growth. X-rays disclosed no abnormality in the lumbar spine or pelvis.

Under observation in the hospital the patient became progressively worse. The subjective numbness spread upward over both lower extremities, and both lower extremities became weak. On the second hospital day the patient was unable to void and catheterization was thereafter necessary. Presently the skin over the lower lumbar spine became reddened and elevated, and the patient cried out with pain upon any movement of her lumbar spine. On June 25, because of the development of headache and a stiff neck, spinal puncture was attempted. However, when a needle was inserted in the site of the previous puncture pus was obtained before the needle had penetrated the dura.

A diagnosis of acute spinal epidural abscess having been made, the patient was transferred to the surgical service and preparation was made for immediate laminectomy. Before operation the patient was given four grams of sodium sulfapyridine intravenously. Under ether anesthesia a midline incision was made over the spaces of the third and fourth lumbar vertebrae. The subcutaneous tissues were found to be diffusely edematous, and when the lumbar fascia was incised and separated from the tips of the transverse processes a considerable quantity of greenish purulent fluid escaped spontaneously on both sides. The muscles were readily separated from the spinous processes and laminae, and it was seen that they were diffusely inflamed and in part necrotic. The spaces and laminae of the third and fourth lumbar vertebrae were first resected. The bone was normal in consistency and did not present any areas of frank osteomyelitis. The dura thus exposed was covered with a soft granulomatous mass containing much free pus. Because the lesion extended in both directions beyond the limits of the exposure, the incision was enlarged and an additional lamina removed both above and below. With this exposure the limits of the granuloma were reached and dura of normal appearance was seen at both ends. Gentle retraction of the dura from side to side permitted the evacuation of a considerable quantity of pus from the anterior portion of the epidural space, and

\*From the Division of Neurosurgery, Department of Surgery, University of Minnesota Medical School, and the Surgical Service of the Minneapolis General Hospital.

from the canal beyond the limits of the laminectomy. The softer areas of the granulomatous mass were removed by suction and gentle blunt dissection. The dura was not opened. The wound was left wide open for drainage and a gauze pack was placed over the granuloma for the control of bleeding.

Postoperatively the patient was placed on sodium methylthiazol orally, in sufficient dosage to maintain a blood level of 11 to 14 mgm. per cent, and this was continued until her temperature reached a normal level, which it did at the end of seven days. During this week she was given daily blood transfusions, a total of 4,825 c.c. of blood being given. On the advice of the Obstetrical Service, 100 per cent oxygen was administered via a B.L.B. mask at frequent intervals during the day for several weeks. Under this regimen the patient made steady improvement. By the third day, all evidence of stiff neck had disappeared and the patient had regained the power of voluntary motion in her toes. Catheterization was necessary for eighteen days.

The day following operation the pack was removed from the wound and was replaced by vaseline gauze strips to prevent adhesion of the wound margins. Sulfanilamide powder was instilled daily. There was profuse purulent and sanguinous discharge for several days, after which the amount of drainage progressively decreased. On the ninth postoperative day, under intravenous pentathal anesthesia, the stay sutures which had been inserted through the skin and muscles at the time of operation was tied, bringing the muscles into approximation except at the ends of the incision. A long Penrose drain was placed between the muscles and the dura and brought out at both ends of the wound. Thereafter the wound was irrigated daily with Dakin's solution. Healing continued and the drain was removed in a week's time.

On the eleventh postoperative day the patient complained of pain in the right side of her face, had a chill, and her temperature rose to 101.5°. The following day there was a spontaneous discharge of pus into the right maxillary sinus and the mouth. This was found to be coming from a large dental root abscess beneath a necrotic third upper molar. The tooth was extracted and the patient's temperature promptly returned to normal. This dental abscess is regarded as the probable source of the metastatic epidural infection, since it is the only other infectious focus found in the patient's body. Cultures from the root abscess yielded a mixed culture of staphylococci, streptococci and pneumococci. Cultures of the epidural abscess grew out *Staphylococcus aureus*.

The patient was allowed to sit in a chair at the end of twenty-five days, and was walking about in comfort upon her discharge from the hospital on the thirty-fifth postoperative day. Her wound was healed.

The patient was readmitted to the Minneapolis General Hospital on the Obstetrical Service on October 25, 1940, just four months from the day of operation, and was delivered of a normal full term female infant without incident. At this time her wound was firmly healed and she had no symptoms or complaints referable to her back or lower extremities.

The diagnosis of metastatic acute spinal epidural abscess is readily made if one bears the possibility in mind. The symptoms come on some days or even weeks after the initiating trauma. The onset is with severe local pain in the spine, which presently is augmented by pain in the distribution of those nerve roots which are irritated as they pass through the epidural space in the region of the inflammatory process. These root pains characteristically are aggravated by coughing, jarring and straining. Within a matter of days signs of

spinal cord involvement appear in the form of sensory and motor paralyses and loss of sphincter control. If unchecked these proceed relatively rapidly to a state of complete paralysis, so-called acute transverse myelitis. The patient is acutely ill and has an elevated temperature and leukocyte count. Examination reveals, in addition to the neurologic signs resulting from the spinal cord involvement, exquisite tenderness of the spine in the region of the abscess together with rigid splinting of the back. The skin overlying the intraspinal abscess may be reddened or edematous. Search may reveal an unsuspected focus of infection elsewhere in the body, particularly in the cutaneous tissues. The diagnosis may be confirmed by aspirating purulent material through a needle inserted into the region of the local swelling or into the epidural space (but not through the dura!) in the region involved. Spinal puncture performed below the level of the lesion will disclose a block of the spinal subarachnoid space and the fluid will contain an increased number of cells but no microorganisms. X-rays of the spine do not contribute to the diagnosis except as they exclude other lesions, such as malignant tumors of the bone.

This appears to be the first recorded instance of spinal epidural abscess arising as a complication of spinal puncture. It seems reasonable to assume that as a result of the repeated insertions of the spinal puncture needle a hematoma formed in the epidural space at the site of puncture, or sufficient injury was done to the interspinous ligaments to provide a necrotic area in which, subsequently, a septic embolus from the dental route abscess lodged. The long interval between the spinal puncture and the onset of symptoms, and the absence of leptomeningitis make it unlikely that the infecting organisms were introduced by the spinal puncture needle.

The only other report of a spinal epidural abscess which followed spinal anesthesia is that of Van Den Berg, but it is by no means clear that the two events were in any fashion related in his case, nor did he claim that they were. A fifteen year old girl sustained a fracture about the ankle as the result of an automobile accident. Because she had an acute upper respiratory infection a spinal anesthesia was administered to permit reduction of the fracture. On the fifth postoperative day the patient complained of girdle pain about her lower chest and on the eighth day she rapidly became completely paralyzed below that level and died within the next day, no diagnosis having been made. At postmortem examination the entire spinal epidural space, from the foramen magnum to the sacrum, was filled with pus containing staphylococci. It is not apparent from the description of the autopsy findings at what point the abscess arose, but to judge from the clinical history it began first in the thoracic region and not in the lumbar region where the spinal puncture was performed. The trauma of the accident itself may reasonably be assumed to have been the precipitating factor.

The need for surgical drainage of a spinal epidural abscess at the earliest possible moment scarcely requires comment. Laminectomy is done at the point of maxi-

mum local tenderness. This is a more reliable guide to the site of the lesion than is the sensory level found on neurologic examination. It should not be necessary to resort to myelography to localize these lesions. The laminectomy should be wide enough to provide free drainage, and should be left wide open.

Without surgical drainage, acute spinal epidural abscesses are almost invariably fatal, and even with such drainage the mortality has in the past been high. Thirty-five per cent of 88 operated cases collected from the literature by Campbell (1937) died, and of those who survived, only 40 per cent escaped without some permanent disability. The survival with good functional recovery which followed in the two cases which I have operated upon may be attributed to three factors: (1) prompt and adequate laminectomy when the diagnosis was made; (2) the free use of postoperative transfusions as a supportive measure; and (3) intensive chemotherapy before and after operation.

#### References

1. Browder, Jefferson, and Meyers, Russel: Infections of the spinal epidural space: an aspect of vertebral osteomyelitis. *Amer. Jour. Surg.*, 37:4-26, (July) 1937.
2. Campbell, M. M.: Pyogenic infections within the vertebral canal. *Bull. Neurol. Inst. N. Y.*, 6:574-591, (Dec.) 1937.
3. Dandy, W. E.: Abscesses and inflammatory tumors in the spinal epidural space (so-called pachymeningitis externa). *Arch. Surg.*, 13:477-494, (Oct.) 1926.
4. Gasul, B. J., and Jaffe, R. H.: Acute epidural abscess, a clinical entity. Report of three cases in children with a complete review of the literature. *Arch. Pediat.*, 52:361-390, (June) 1935.
5. Van den Berg, W. J.: Acute metastatic spinal epidural abscess. *Calif. and Western Med.*, 46:257-259, (April) 1937.

#### DIVERTICULA OF THE GASTRO-INTESTINAL TRACT

JAMES JOHNSON, M.D.

Dr. James Johnson gave a very interesting paper entitled "Diverticula of the Gastro-intestinal Tract."

Following is the brief discussion.

#### Discussion

DR. LEE: Is there any relationship between diverticulitis and trauma or any exertion such as shoveling snow?

DR. JOHNSON: I have gone over this subject very thoroughly and find no reference in the literature to trauma having any etiological significance. The cause of the diverticula of course is intraluminal pressure. I do not see how a diverticulitis could in itself be due to trauma except perhaps from some severe trauma direct to the abdomen. In that case, of course, the diverticulum would have to be present before the trauma. I believe it would be fair to state that there is no connection between trauma and diverticulitis.

Dr. F. A. Olson showed some very interesting slides of the technique employed in the treatment of diverticulæ. He also gave a brief discussion of the technique.

DR. STANLEY R. MAXEINER: Dr. Olson's discussion and his very excellent photographic slides were thoroughly enjoyable. Part of the slides which he showed were photographic illustrations of the paper which I recently presented before the Western Surgical Association.

For years there has been a controversy as to whether one should employ the one- or two-stage procedure. Dr. Lahey has adhered to the two-stage operation because he believes that it is safer, while Babcock, Shallow and others subscribe routinely to the one-stage operation.

The technique which we have recommended and which, to our knowledge, is original, possesses all of the merits of the two-stage operation but may be accomplished in one stage. We do not see many of these patients but one such operation has been performed with complete success. Dr. Carl Rice operated upon one patient by this technique and Professor Wangenstein of the University employed the same procedure on another patient with equal success. In each of these three cases the clamp fell off in about six days, there was no sinus and the patients gained weight rapidly.

A patient operated upon by us several years ago by the Coffey technique for an annular constriction of the rectosigmoid which had every gross appearance of malignancy proved to be an inflammatory reaction around a diverticulum. A second similar case had a perforation of a diverticulum in which we found a campaign button. A portion of the wall of the diverticulum was removed for biopsy, the perforation was closed and the wound drained. Biopsy revealed a malignancy superimposed on a perforating diverticulum from which we had removed the campaign button, the celluloid cover of which had entirely disintegrated.

#### CONSTITUTION AND DIET IN TUBERCULOSIS

Resistance to disease may depend upon many things, but probably the most important, all other things being equal, is the inherited constitution. This belief is based on epidemiological studies, family records, studies of identical and fraternal twins, and animal experimentation. Excellent examples of each are cited and interpreted by the author.

The constitution can, however, be modified by outside influences, not the least of which is the food we eat. That diet does influence the cause of tuberculosis has been well demonstrated by students of the problem during economic depressions and war.

For example, Denmark's experience during the World War is significant. In the belligerent countries the tuberculosis death rate rose steadily and reached its peak in 1918. In Denmark also the rate rose but the peak was reached in 1917 and fell precipitately. From the beginning of the war Denmark exported great quantities of butter, cattle and bacon; margarine replaced butter in the diet. There was loss of vitamins A and D. The consumption of meat and fish fell off. In 1917 the blockade interfered with exportation. The consumption of butter in Denmark promptly quadrupled, and that of meat increased almost five-fold. Total calories consumed did not vary much. All other factors that might influence the tuberculosis rate were accounted for. The consumption of meat and fish seemed to parallel the mortality curve inversely—the consumption of vegetables did not.

Better dietary habits, especially during the past twenty years, have enhanced inborn resistance to all diseases including tuberculosis. These two factors, the inherited constitution and the better understanding of nutrition, have played their part in the reduction of the tuberculosis mortality rate.—*Constitution and Diet in Tuberculosis*, by Fred H. Heise, M.D., *Amer. Rev. of Tuberc.*, Feb., 1941.

---

## REPORTS and ANNOUNCEMENTS

---

### AMERICAN COLLEGE OF PHYSICIANS

One of the large medical meetings held each year is the annual session of the American College of Physicians. Next year's meeting will be in Saint Paul, April 20-24, according to the announcement of Dr. Roger I. Lee, of Boston, president of the college, who is in charge of the program of the General Sessions and Lectures. Dr. John Lepak, Saint Paul, has been appointed general chairman and will have charge of the hospital clinics and all local arrangements. Mr. Edward Loveland, executive secretary of the College, 4200 Pine Street, Philadelphia, will have general management of the session and the technical exhibits.

### AMERICAN CONGRESS OF PHYSICAL THERAPY

The twentieth annual meeting of the American Congress of Physical Therapy will be held September 1 to 5, 1941, inclusive, at the Mayflower Hotel, Washington, D. C.

The mornings will be devoted to an instruction course and the afternoons and evenings to scientific and clinical sessions. Sessions will be open to physicians and qualified technicians.

Further information may be obtained by addressing the American Congress of Physical Therapy, 30 North Washington Avenue, Chicago, Illinois.

At the same time the twenty-fifth annual meeting of the American Occupational Therapy Association will be held at The Mayflower. For further information address Mrs. Meta R. Cobb, 135 Fifth Avenue, New York, N. Y.

### INTER STATE POSTGRADUATE MEDICAL ASSOCIATION

The International Assembly of the Inter State Post Graduate Medical Association will be held in the auditorium at Minneapolis the week of October 13, 1941. The Hennepin County Medical Society will be host to the Assembly and some eighty-five prominent teachers and clinicians from the United States and Canada will appear on the program.

A large number of Minnesota men will take part in the International Assembly. Those who will give clinics include: Dr. Claude F. Dixon of Rochester, "Regional Ileitis"; Dr. N. Logan Leven of Saint Paul, "Burns and Reconstructive Surgery"; Dr. C. Donald Creevy of Minneapolis, "Stones in the Upper Urinary Tract"; Dr. Walter Alvarez of Rochester, "Nervous Exhaustion as a Cause of Gastro-Intestinal Symptoms"; Dr. John L. McKinley of Minneapolis, "Neuritides"; Dr. Paul A. O'Leary of Rochester, "Modern Treatment of Syphilis"; and Dr. Irvine McQuarrie of Minneapolis,

"The Etiology and Treatment of Nephrosis in Children."

Among those giving addresses will be: Dr. Alfred W. Adson of Rochester, "The Diagnosis and Surgical Management of Brain Tumors"; Dr. E. T. Bell of Minneapolis, "Acute and Chronic Glomerulonephritis"; Dr. William F. Braasch of Rochester, "Hypertension and the Surgical Kidney"; Dr. Howard K. Gray of Rochester, "The Use of Pedicle Muscle Grafts in Obliterating Non-tuberculous Empyema Cavities"; Dr. Robert G. Green of Minneapolis, "Virus Diseases"; Dr. Charles W. Mayo of Rochester, "High Concentrations of Oxygen in Surgery"; Dr. John L. McKelvey of Minneapolis, "Disturbances of the Vascular System in Pregnancy"; Dr. Horace Newhart of Minneapolis, "Possibilities of Attainment in the Conservation of Hearing"; Dr. Maurice B. Visscher of Minneapolis, "Physiological Studies on the Usefulness of Helium in Respiratory Mixtures"; Dr. Waltman Walters of Rochester, "Adrenal Tumors"; and Dr. Owen H. Wangenstein of Minneapolis, "Some of the Advantages of Closed Anastomosis in Gastro-intestinal Resections."

### NAVY MEDICAL CORPS

The Surgeon General of the U. S. Navy has announced that the next examinations for entrance into the regular Navy as commissioned officers in the Medical Corps will be held for Acting Assistant Surgeon (Intern) on October 6, 1941, January 5, 1942, and for Assistant Surgeon on August 11, 1941, October 6, 1941, January 5, 1942.

Examinations will be held at all of the larger naval Hospitals and at the Naval Medical Center, Washington, D. C. Applications for authorization to take the examination must be in the Bureau of Medicine and Surgery three weeks prior to the date of the examination. Application forms for these examinations will be forwarded by the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., upon request.

### MINNESOTA RADIOLOGICAL SOCIETY

The thirteenth annual meeting of the Minnesota Radiological Society was held in Saint Paul on May 27, 1941. Dr. Leroy Sante of Saint Louis delivered the Annual Carman Lecture before the general session of the Minnesota State Medical Association. His subject was "Roentgen Observations in Chest Injuries."

Dr. G. T. Nordin of Minneapolis was elected president of the Minnesota Radiological Society, Dr. A. U. Desjardins of Rochester was elected vice president and Dr. J. P. Medelman of Saint Paul was reelected secretary.

(Continued on Page 598)





## GROWING COMFORTABLY ON S-M-A



Pretty soft life! Nothing to do but eat, sleep and grow in comfort on S-M-A. It's a happy, healthy first year for the S-M-A fed infant because S-M-A promotes normal, comfortable growth.

In addition to fat, carbohydrate and protein of physiological characteristics and proportions, each feeding of S-M-A provides standardized quantities of iron and vitamin A, B<sub>1</sub> and D. Only vitamin C need be supplemented.

Prescribing S-M-A makes life more pleasant for the doctor and the mother, too, because excellent results are obtained simply and quickly.

" " "

*Normal infants relish S-M-A . . . digest it easily and thrive on it.*

" " "

**FOR TREATMENT OF FOOD  
ALLERGY DUE TO SENSITIVITY  
TO MILK PROTEIN**  
A Special Product

### **HYP0-ALLERGIC MILK**

Hypo-Allergic Milk is thermally processed cows' whole milk in which the sensitizing properties of the protein are altered without affecting the caloric value of the protein or whole milk itself.

It may be used the same as cows' whole milk, as a beverage, or in infant feeding formulae where a sensitivity to milk protein is known to exist.

*Complete information upon request.*

\*S-M-A, a trade mark of S.M.A. Corporation, for its brand of food especially prepared for infant feeding—derived from tuberculin-tested cow's milk, the fat of which is replaced by animal and vegetable fats, including biologically tested cod liver oil; with the addition of milk sugar and potassium chloride; altogether forming an antirachitic food. When diluted according to directions, it is essentially similar to human milk in percentages of protein, fat, carbohydrate and ash, in chemical constants of the fat and physical properties.



**S.M.A. CORPORATION • 8100 McCORMICK BOULEVARD • CHICAGO, ILLINOIS**

JULY, 1941

597

### COURSES IN OBSTETRICS

The Illinois State Department of Public Health and the United States Children's Bureau are sponsoring ten four-week courses in obstetrics during 1941-42 at the Chicago Lying-in Hospital, University of Chicago. The first course began June 30. Only a limited number of physicians will be accepted for each course. Applications and inquiries should be addressed to Postgraduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Avenue.

### MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The program for the meeting of the Minnesota Society of Neurology and Psychiatry held in Rochester, May 24, included a surgical demonstration in the morning, a luncheon at the Mayo Foundation House at which Dr. T. B. Magath of Rochester spoke, and a program of scientific papers presented in the afternoon in the sixth floor auditorium of the new wing of St. Mary's hospital. Sixty persons attended the luncheon.

Those who presented papers included: Drs. O. A. Turner, J. W. Kernohan, L. M. Eaton, M. N. Walsh, W. McK. Craig, G. S. Baker, H. W. Wagener and J. D. Camp. The program was followed by a surgical clinic conducted by Drs. Craig, J. G. Love and Baker.

### MINNESOTA-DAKOTA ORTHOPEDIC CLUB

Meeting in Rochester, May 24, thirty members of the Minnesota-Dakota Orthopedic Club attended a dry clinic at St. Mary's hospital in the morning, followed by a general session and luncheon at the Mayo Foundation House at 10 a.m.

### BROWN-REDWOOD MEDICAL SOCIETY

Dr. T. R. Fritsche of New Ulm was elected president of the Brown-Redwood Medical Society at its annual meeting in New Ulm, May 14. Other officers elected were Dr. E. J. Wohlrahe of Springfield, vice president; and Dr. O. B. Fesenmaier of New Ulm, secretary-treasurer. Dr. Hjalmar Mortensbak of Hanska is the retiring president.

The meeting and program followed the annual banquet for the physicians and their wives.

Dr. Walter Fansler of Minneapolis read a paper on "Rectal Diseases," and Dr. Myron Henry, also of Minneapolis, a paper on "Fractures of the Upper Arm."

### SCOTT-CARVER MEDICAL SOCIETY

When the annual meeting of the Scott-Carver Medical Society was held at the Shakopee State Reformatory, June 10, Dr. George T. Schimelpfenig of Chaska was elected president. Other officers named are: Dr. Edward E. Novak of New Prague, vice president; Dr. B. F. Pearson of Shakopee, secretary. Dr. Novak was named delegate; Dr. Pearson, alternate; and Dr. Frederick Herbert Buck of Shakopee, censor.

Dr. Lad John Kucera of Lonsdale and Dr. Pearson reviewed pediatric and obstetrical short courses.

## In Memoriam

### Fletcher Weston Powers

Dr. Fletcher Powers, for thirty-nine years a practitioner at Barrett, Grant County, Minnesota, died at his hospital on April 26, 1941, after a lingering illness.

Dr. Powers was born at Delano, Wright County, Minnesota, September 25, 1872. He received his early education in Saint Paul, Minnesota, and received his medical degree at Hamline University in 1902. He was licensed and began practice in the same year at Barrett, Minnesota. He later took postgraduate work in surgery.

In 1915 he opened his own hospital for medical, surgical and obstetrical work, which he operated until his death.

Dr. Powers was active in all civic affairs. He was a member of the Park Region Medical Society, the Minnesota State and American Medical Associations, a member of the Minnesota Hospital Association and also a member of the Masonic lodge.

His death caused great sorrow not only in Barrett, where he had lived and worked for more than thirty-nine years, but also throughout the entire county and many distant points to which his acquaintanceship and friendly disposition had spread.

Dr. Powers was one of the best known and best loved men in Grant County. His philosophy of life was a constant urge and desire to "Live in a house by the side of the road and be a friend of man."

His body was taken to Rockford, Minnesota, for burial.

His wife and four daughters survive, also one sister, Mrs. E. E. Barrow of Big Lake, Minnesota, and a foster brother, Harry Atwood of Austin, Minnesota.

Fulminating pulmonary tuberculosis, such as miliary tuberculosis, is rather infrequent among persons in better circumstances, while fibroid phthisis is more likely to occur among persons under better economic surroundings. Extremely acute manifestations of rheumatic infections are relatively infrequent among the better-to-do, while the more chronic type of fibrosing mitral stenosis is more likely to occur. In both tuberculosis and rheumatic fever these differences are conditioned by better treatment, ability to obtain more rest, less arduous occupations and many other considerations.—O. F. HEDLEY, *Pub. Health Rep.* (Oct. 11) 1940.



## PATHOLOGY OF THE UPPER RESPIRATORY TRACT: 2



Congested mucous membrane

Antrum filled with pus and mucus

### INFECTION OF THE ANTRUM OF HIGHMORE



SOLUTION



EMULSION



JELLY

**C**ARDINAL principle of treatment of such infections is establishment of free drainage. To do this without surgery the mucous membranes must be shrunk thoroughly—for long periods, yet without local toxic effects.

### NEO-SYNEPHRIN HYDROCHLORIDE

(laevo-alpha-hydroxy-beta-methyl-amino-3 hydroxy ethylbenzene hydrochloride)

The synthetic vasoconstrictor which shrinks mucous membranes rapidly, without "sting", with more prolonged effect than ephedrine, and with lower toxicity in therapeutic dosage. Unpleasant side reactions are almost never encountered.

#### DOSAGE FORMS:

- Solution** —  $\frac{1}{4}\%$  and  $1\%$  in saline solution (1-oz. bottles)  
 $\frac{1}{4}\%$  in Ringer's solution with Aromatics (1-oz. bottles)  
**Emulsion** —  $\frac{1}{4}\%$  (1-oz. bottle with dropper)  
**Jelly** —  $\frac{1}{2}\%$  (in collapsible tubes with nasal applicator)

**FREDERICK STEARNS & COMPANY, Detroit, Michigan**

New York

Kansas City

San Francisco

Windsor, Ontario

Sydney, Australia

## ◆ OF GENERAL INTEREST ◆

Dr. Leo Conlin has opened offices at 73 Seventh Avenue N. E. in North Saint Paul.

\* \* \*

Dr. F. C. Dolder of Eyota, Minnesota, is president of the Eyota Commercial Club.

\* \* \*

The marriage of Dr. J. F. Pohl of Minneapolis to Miss Alice Elizabeth Croze, took place in Minneapolis, June 16.

\* \* \*

Dr. J. A. Bargaen of Rochester is the newly elected secretary of the American Gastro-Enterological Association.

\* \* \*

Dr. Jesse L. Bollman of Rochester is the newly elected president of the American Society for Experimental Pathology.

\* \* \*

Dr. L. A. French of Minneapolis is assisting Dr. H. T. Petrabor of Aitkin. The latter is planning a vacation trip to the West Coast.

\* \* \*

Dr. Frank H. Krusen of Rochester was guest speaker at a meeting of the Alumni Association of the Jefferson Medical College of Philadelphia, June 5.

Dr. T. J. Bloedel of Minneapolis is assisting Dr. R. O. Spittler of New Richland and will take over the latter's practice when Dr. Spittler is called for service in the army as reserve medical officer.

\* \* \*

Dr. John Kelly of Saint Paul has taken over the practice in Aitkin of Dr. R. A. Murray, who has been called to duty with the United States Army as captain in the medical corps at Fort Leonard Wood.

\* \* \*

Dr. E. N. Nelson, who has practiced medicine in Lake Park, Minnesota, for the past four years, is now located in Minneapolis, having become associated with the Bloomington-Lake Clinic last month.

\* \* \*

Dr. James E. Dyson, a graduate of the University of Minnesota Medical School Class of 1916, has been appointed acting director of health of the public schools of Des Moines, Iowa.

\* \* \*

Among those addressing the eighteenth annual meeting of the Pacific Northwest Medical Association in Spokane, Washington, June 25-28, was Dr. John deJ. Pemberton of Rochester whose subject was "Surgery of the Thyroid Gland; Lesions of the Colon and Rectum; Present Status of Surgery of the Spleen."

**PATIENTS  
LIKE IT!**  
**CHOCOLATE FLAVORED  
EMULSION OF LIQUID PETROLATUM**

Contains 60% liquid petrolatum U.S.P. and 1% agar agar  
With Phenolphthalein or Plain



NO OILY "AFTER-TASTE"  
**TASTES LIKE THE  
CHOCOLATE IN A  
DELICIOUS DESSERT**  
**WINS COOPERATION**



**COUNCIL  
ACCEPTED**



**THE  
SMITH-DORSEY CO.  
LINCOLN, NEBRASKA**

Manufacturers of  
Pharmaceuticals to the Medical  
Profession Since 1908

**MAKE IT A *TASTY* PRESCRIPTION! • WRITE FOR SAMPLE**



## For the local Treatment of Acute Anterior Urethritis

(DUE TO NEISSERIA GONORRHEAE)

### SILVER PICRATE\*

A complete technique of treatment and literature will be sent upon request

\*Silver Picrate is a definite crystalline compound of silver and picric acid. It is available in the form of crystals and soluble trituration for the preparation of solutions, suppositories, water-soluble jelly, and powder for vaginal insufflation.

JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA

### Silver Picrate,

Wyeth, has a convincing record of effectiveness as a local treatment for acute anterior urethritis caused by *Neisseria gonorrhoeae*.<sup>1</sup> An aqueous solution (0.5 percent) of silver picrate or water-soluble jelly (0.5 percent) are employed in the treatment.

1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," *Am. J. Syph., Gon. & Ven. Dis.*, 23, 201 (March), 1939.

A gift of rare lithographs showing the anatomy of the ear have been presented to the University of Minnesota division of Otolaryngology by Dr. Charles Nelson Spratt of Minneapolis.

\* \* \*

Dr. E. M. Kingsbury of Clearwater recently was named chief medical officer at the state reformatory at Saint Cloud. He will continue his Clearwater practice, maintaining evening office hours there.

\* \* \*

Dr. John J. Ederer, who had been stationed at Fort Lewis, Washington, in the army medical corps, has returned to Mahanomen to resume his medical practice. He has reopened his hospital there.

\* \* \*

Dr. Howard H. W. Wolfe of Saint Paul has been promoted from the rank of captain to that of major in the army medical corps. Dr. Wolfe is stationed at Camp Haan.

\* \* \*

Dr. Edward C. Rosenow of Rochester presented a report on "Poliomyelitis in the Fort Wayne Area during the 1940 Epidemic" at a meeting of the Fort Wayne Medical Society, Indiana, April 22.

\* \* \*

The University of Minnesota Hospitals has increased its rates to conform with minimum rates adopted by the Saint Paul and Minneapolis hospital councils. Rates for accessory services have been brought into line with the new rates.

Dr. E. E. Barrett of Duluth was recently certified by the American Board of Pediatrics, while Dr. P. N. Bray, also of Duluth, was certified by the American Board of Obstetrics and Gynecology.

\* \* \*

Dr. Kenneth L. Nelson, who has been on the medical staff at the state hospital in Anoka, has taken over the practice of Dr. Fred H. Wiechman of Montgomery during the latter's period of service with the United States Army.

\* \* \*

When the seventy-second annual meeting of the Canadian Medical Association was held in Winnipeg, June 23-27, Dr. William F. Braasch of Rochester presented a paper, "The Surgical Kidney as a Factor with Hypertension."

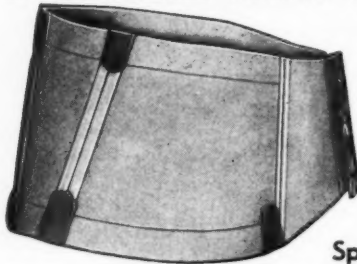
\* \* \*

Dr. E. V. Allen of Rochester is the newly elected president of the Mayo Foundation chapter of Sigma Xi, succeeding Dr. R. M. Wilder. Other officers are Dr. A. C. Broders, vice president; and Dr. H. E. Essex, secretary-treasurer.

\* \* \*

Dr. George E. Runnerstrom of Minneapolis, who for nineteen years has been associated with the United States Veterans Administration at Fort Snelling, has become a medical member of the Dependents' Pension Board in Washington. A graduate of the University of Minnesota School of Medicine, Dr. Runnerstrom has for the past 17 years been a medical member of a claims and rating board.

## A Convenient Source of Supply



**ABDOMINAL SUPPORTER NO. 400**

A well-made, woven elastic Abdominal Supporter. Lace back. A popular postoperative Supporter. Stock sizes: 30 to 42 even sizes. Special sizes made to order.

**Special \$3.75**



### It's New— The Marquette Truss

Sizes 30" to 44".

When ordering, specify whether Right, Left or Double.

• Rustless Spring • Sweat-proof Leather Covering • Comfortable to Wear • Convenient to Fit • Ideal for Injection Method

#### PROFESSIONAL PRICE

For Single Hernia.....	\$ 5.75
Retail .....	10.00
For Double Hernia.....	10.00
Retail .....	14.00



**SACRO-ILIAC BELT**

Popular Type, **Only \$4.00**

A high grade Sacro-iliac Support made of Orthopedic Webbing—width 6"—well reinforced and supplied with perineal straps. Take measurements around hip 3" below the iliac crest. Stock sizes: 30" to 44". Extra sizes on special order.

**C. F. ANDERSON CO., INC.**

**ATLANTIC 3229**

**901 MARQUETTE • MINNEAPOLIS**

Dr. Russell M. Wilder of Rochester addressed the annual Conference of Health Officers and Public Health Nurses held at Saratoga Springs, New York, June 24-26. His subject was "Nutrition—A Public Health Problem."

\* \* \*

Clinics were conducted by Drs. Gordon B. New and Waltman Walters of Rochester and Dr. George E. Fahr of Minneapolis at the eighteenth annual assembly and dry diagnostic clinic of the Twin Lakes District Medical Society held at Rockwell City, Iowa, June 19.

\* \* \*

Physicians of the Abbott Hospital staff in Minneapolis held their annual picnic June 4 at the summer homes of Dr. Edward D. Anderson, Dr. Paul F. Dwan and Dr. H. M. N. Wynne, which adjoin each other on the Minnesota River.

\* \* \*

Dr. Harold F. Wahlquist of Minneapolis was a member of the arrangements committee for the silver anniversary luncheon of the University of Minnesota Class of 1916. The luncheon was a part of the Alumni Day activities June 13.

\* \* \*

Dr. Milton Starekow has become associated in practice with Dr. O. G. Lynde of Thief River Falls. Dr. Starekow is a graduate of Rush Medical college, and served his internship at St. Joseph's hospital in St. Paul.

\* \* \*

Dr. Robert E. Priest is opening offices at 1008 Medical Arts Building in Minneapolis for the practice of otolaryngology. Dr. Priest has been a medical fellow in otolaryngology at the University of Minnesota Hospitals.

\* \* \*

Dr. Robert Bowers of Mazeppa has moved to Lake City to practice with his father, Dr. Harry E. Bowers. The latter's partner, Dr. W. J. Cochrane, has retired.

Dr. Robert Bowers is maintaining office hours in Mazeppa every afternoon.

\* \* \*

A gift of \$1,250 from the National Research Council for the study of "the relation of the pituitary to lipid and carbohydrate metabolism," has been granted the University of Minnesota. The study will be made under the direction of Dr. Leo T. Samuels of the department of physiology.

\* \* \*

*Correction.*—Due to a mistake in typesetting an error occurred in the table on page 316 in the May 1941 issue, in the article on "Blood Tests to Prove Non-Parentage." The table there listed should have read as follows:

Groups	Cells (agglutinogens)	Serum (agglutinins)
O	—	a and b
A	A	b
B	B	a
AB	A and B	—

Guest speakers at forty-seventh annual meeting of the Utah State Medical Association held at the University of Utah in Salt Lake City, Utah, June 12-14, included Dr. Edward H. Rynearson of Rochester whose topic was "Hyperinsulinism; Endocrinology—A Critical Review."

\* \* \*

When the twenty-fourth annual meeting of the American Broncho-Esophagological Association was held in Cleveland, June 3, Dr. Herman J. Moresch of Rochester presented a paper, "Further Observations on the Treatment of Esophageal Varices by Injection of a Sclerosing Solution."

\* \* \*

A thief rifled the business suits of two Saint Paul physicians, June 7, while they were performing an operation in St. John's Hospital and obtained \$260 in cash. The suits, which were left in a room adjoining the operating room, were those of Dr. Herbert L. Stolpestad and Dr. A. H. Stolpestad.

\* \* \*

Dr. M. Rochae Silva, a fellow of the Guggenheim Memorial Foundation, has entered the Mayo Foundation in Rochester to work at the Institute of Experimental Medicine with Dr. C. F. Code. He is assistant in biology of the Faculty of Science, Instituto Biologico, University of Sao Paulo, Sao Paulo, Brazil.

\* \* \*

Dr. Harry W. Christianson, assistant physician at the University of Minnesota Health Service, was elected a fellow of the American Proctologic Society at its annual meeting in Cleveland last month.

Dr. N. D. Smith of Rochester discussed papers presented at this meeting.

\* \* \*

Among papers presented at the twelfth scientific meeting of the Association for Research in Ophthalmology held in Cleveland, June 3, was one by Drs. William L. Benedict and Edith M. Parkhill of Rochester, entitled, "Gliomas of the Retina: Histogenesis and Histopathologic Classification."

\* \* \*

Dr. Charles W. Froats and Dr. Arthur Koepsell of Saint Paul are new diplomates of the American Board of Obstetrics and Gynecology through qualifying in the June examinations held in Cleveland.

Diplomates from Minneapolis include: Dr. John A. Haugen, Dr. Edward Maeder and Dr. Harold Leland.

\* \* \*

Dr. J. A. Myers of Minneapolis was in his "home town" of Croton, Ohio, May 20 to deliver the commencement address at the Hartford High School. The occasion marked the thirty-fifth anniversary of Dr. Myer's graduation from that high school.

During May, Dr. Myers also gave several other addresses. He spoke before medical societies and tuberculosis associations in Harrisburg, Robinson, Springfield and Taylorville, Illinois, May 13 and 14. On May 6, he was in San Antonio, Texas, where he discussed a paper by Dr. L. Brahdy of New York City on "Tuberculosis as an Occupational Disease among Hospital Personnel," and on May 7 he conducted a meeting in San Antonio on the control of tuberculosis in the school systems of United States.

JULY, 1941

## COMPETENT MEDICAL SECRETARIES LABORATORY TRAINED



One of our laboratories

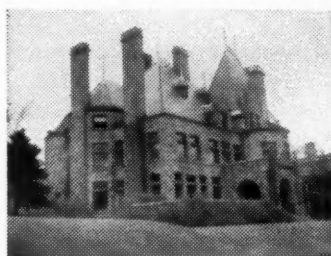
Graduates of the College of Commerce have been trained to assist doctors in laboratory tests, take care of office accounts and bookkeeping, handle correspondence and act as receptionists.

Partial list of subjects studied in the laboratory and classroom:

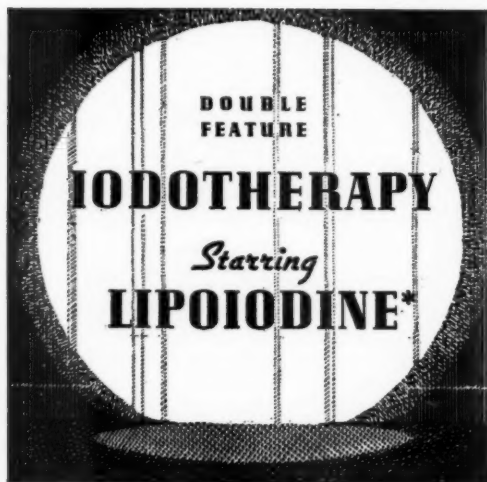
Blood Count  
Urinalysis  
Basal Metabolism  
Differentials  
Shorthand  
Bookkeeping  
Typewriting  
and many others

The special study and laboratory training in addition to the usual business and secretarial courses, qualify the graduates of the College of Commerce as efficient Medical Secretaries, ready to do your job right, from the beginning.

Write or call for further information



**COLLEGE OF COMMERCE INC.**  
La Salle Ave. at 19th St. Atlantic 3434  
MINNEAPOLIS, MINNESOTA



**1** Lipoiodine, "Ciba," unlike the alkaline iodides, is eliminated very slowly. Thus, the organism may be maintained under the influence of iodine with much smaller doses and so considerably diminish the dangers of iodism.

**2** Lipoiodine (ethyl ester of di-iodobrassicic acid containing 41% organic iodine) passes through the stomach practically unchanged, with a minimum of irritation.

● We urge you to try Lipoiodine whenever iodine is needed in secondary and tertiary syphilis, selected cases of thyroid dysfunction, arteriosclerosis, scrofulosis, bronchial affections, etc. . . . In bottles of 30 and 100 tablets (4½ grains each) . . . Literature upon request.



\*Trade Mark Reg. U. S. Pat. Off. Word "Lipoiodine" identifies the product as ethyl ester of di-iodobrassicic acid of Ciba's manufacture.



**CIBA PHARMACEUTICAL PRODUCTS, Inc.**  
SUMMIT NEW JERSEY

Three members of the University of Minnesota School of Medicine, surgery department, were honored at a dinner by the University of Minnesota Hospitals surgical staff at Coffman Memorial Union, June 10. They are Drs. J. Frank Corbett, Harry P. Ritchie and Alexander R. Colvin.

\* \* \*

Dr. C. W. Mayo was in Detroit, Michigan, June 11, to address the alumni of the Wayne University College of Medicine. On June 12, he was in Pittsburgh to address a meeting of the Pittsburgh Surgical Society. His subject for both meetings was "Malignancy of the Lower Portion of the Colon and Rectum; Combined Abdominoperineal Resection."

\* \* \*

Dr. Walter C. Alvarez of Rochester attended a meeting of the Seventh Councilor District of the Medical Society of the State of Pennsylvania, held in Williamsport, May 9. His subject was "Puzzling Types of Abdominal Pain." He also addressed a joint meeting with the woman's auxiliary of the district on "Why Women Get Nervous."

\* \* \*

Expected to return in August to the University of Minnesota Medical School is Dr. Charles E. McLennan of the department of obstetrics and gynecology. As holder of the Commonwealth Fund fellowship, Dr. McLennan has been studying problems concerned with the toxemias of pregnancy for the past year with Dr. E. M. Landis of the University of Virginia.

\* \* \*

Principal address at the unveiling of Dean Cornwell's new painting, "Conquerors of Yellow Fever," in Cleveland, June 2, was delivered by Dr. Philip S. Hench of Rochester. The painting is the third in a series called "Pioneers of American Medicine."

Dr. Hench also attended the meeting of the American Rheumatism Association in Cleveland.

\* \* \*

The Medico-Military Inactive Status Training Unit of the Mayo Foundation, scheduled for October 5 to 19 of this year, will be suspended during the present emergency, it is announced by Dr. Donald C. Balfour, director of the Mayo Foundation. On resumption of the school, notice will be published throughout the Corps Areas and Naval Districts.

\* \* \*

A survey course in "Health Problems in Industry," will be presented at the Center for Continuation Study at the University of Minnesota, August 4 to 6. The course is for physicians, nurses and personnel managers, and will be concerned with a health program as it relates to physical examination, dispensary service, sick leave, hospitalization, safety education, hazards, sanitation, preventive medicine and public health.

\* \* \*

The War department has authorized the granting of commissions as second lieutenant in the medical administrative corps to junior and senior medical students in good standing, without previous R.O.T.C. training. Upon completion of their medical course,



# OF GENERAL INTEREST

this commission will be canceled and a commission of first lieutenant in the medical reserve corps will be given.

\* \* \*

The 1942 meeting of the American Federation of Clinical Research is to be held in the Twin Cities, according to tentative plans. Dr. Richard L. Varco, who represented the University of Minnesota chapter at the federation's organization meeting in Atlantic City recently, has been named arrangements chairman for the meeting and an ex officio member of the executive committee.

\* \* \*

Dr. Ralph G. Ghormley and Dr. Harry B. Macey of Rochester addressed a meeting of the American Orthopaedic Association in Toronto, June 9 to 12. Dr. Ghormley's paper, written in collaboration with Dr. M. B. Dockerty, is entitled, "Cystic Myxomatous Tumors About the Knee with Special Reference to Cysts of the Semilunar Cartilages." Dr. Macey's subject is "Amputation of the Lower Extremities in Occlusive Arterial Diseases: A Ten-Year Review."

\* \* \*

To increase coordination of the services of 130 public and private welfare organizations in Minneapolis, a program of research and planning has been announced for that city. Representatives of various organizations will serve as volunteers to improve welfare services. Dr. Edgar J. Huenekens, president-elect and James H. Baker, executive secretary, have been named to represent the Hennepin County Medical Society in the division on health and medical care.

\* \* \*

A paper by Drs. Fred Z. Havens and Edith M. Parkhill of Rochester was presented at the forty-seventh annual meeting of the American Laryngological, Rhinological and Otolological Society in Los Angeles, June 16-18. Subject of their paper was "Malignant Tumors of the Larynx Other Than Squamous Cell Epitheliomas."

Dr. Bert E. Hempstead of Rochester also presented a paper, "Treatment and Prognosis of Aural Infections Complicated by Severe Diabetes."

\* \* \*

The marriage of Dr. Eva-Jane Ostergren, daughter of Dr. and Mrs. Edward W. Ostergren of Saint Paul, to Dr. Bert Raleigh Larson of Minneapolis, took place June 25 at the home of the bride's parents.

The bride is a graduate of the University of Minnesota School of Medicine, and is a member of Alpha Epsilon Iota, professional medical sorority, and of Kappa Delta.

Dr. Larson is a graduate of the University of Minnesota School of Dentistry and is a member of Delta Sigma Delta, professional dental fraternity.

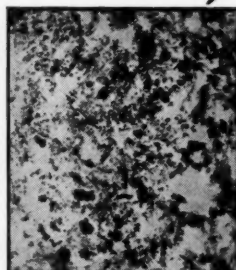
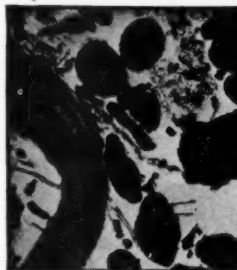
\* \* \*

Grants in aid with which to continue important researches now under way, have been made to two members of the University of Minnesota Medical School faculty. Dr. Cecil J. Watson, associate professor and director of the division of internal medicine, has received \$3,600 from the John and Mary R.

JULY, 1941

## See why *Libby's* **BABY FOODS** are extra easy to digest

(Statement accepted by the AMA Council on Foods)



**STRAINED VEGETABLES**  
MAGNIFIED 200 TIMES

**LIBBY'S HOMOGENIZED VEGETABLES**  
MAGNIFIED 200 TIMES

THESE PHOTOMICROGRAPHS demonstrate why Libby's exclusive process of *special homogenization* makes vegetables and fruits easier to digest. In the photomicrograph at the left, showing strained vegetables, note the large cells, coarse fibers, and closely packed starch granules. Compare it with the photomicrograph of Libby's specially homogenized Vegetables. Cells and fibers are broken up, starch particles uniformly distributed, and nutriment released for easier digestion.

If you have never examined Libby's Baby Foods, we would like very much to send you a sample can. As soon as you open it, you will notice how much smoother and finer textured Libby's are. Libby, McNeill & Libby, Chicago.

*The Libby Baby*  
*Pantry*



**PEAS CARROTS SPINACH**  
**VEGETABLE COMBINATIONS:**

No. 1—Peas, Beets, Asparagus; No. 2—Pumpkin, Tomato, Green Beans; No. 3—Peas, Carrots, Spinach; No. 9—Peas, Spinach, Green Beans; No. 10—Tomato, Carrots, Peas

**FRUIT COMBINATIONS:** No. 5—Prunes, Pineapple Juice, Lemon Juice; No. 8—Bananas, Apples, Apricots

**CEREAL 2 SOUPS EVAPORATED MILK**

**ALSO Libby's Chopped Foods for older babies (10 varieties)**

## Cook County Graduate School of Medicine

(In Affiliation with Cook County Hospital)

Incorporated not for profit

### ANNOUNCES CONTINUOUS COURSES

**SURGERY**—Two Weeks Intensive Course in Surgical Technique with practice on living tissue, starting every two weeks. General Courses One, Two, Three and Six Months; Clinical Courses; Special Courses. Rectal Surgery every week.

**MEDICINE**—Two Weeks Intensive Course starting October 6. Two Weeks course in Gastro-Enterology starting October 20. Four Weeks Course in Internal Medicine starting August 4. Two Weeks Intensive Course in Electrocardiography & Heart Disease starting August 4.

**FRACTURES & TRAUMATIC SURGERY**—Two Weeks Intensive Course starting September 22. Informal Course every week.

**GYNECOLOGY**—Two Weeks Intensive Course starting October 20. One Month Personal Course starting August 25. Clinical Course every week.

**OBSTETRICS**—Three Weeks Personal Course starting August 4. Two Weeks Intensive Course starting October 6. Informal Course every week.

**OTOLARYNGOLOGY**—Two Weeks Intensive Course starting September 8. Informal Course every week.

**OPHTHALMOLOGY**—Two Weeks Intensive Course starting September 22. Informal Course every week.

**ROENTGENOLOGY**—Courses in X-Ray Interpretation, Fluoroscopy, Deep X-Ray Therapy every week.

General, Intensive and Special Courses in All Branches of Medicine, Surgery and the Specialties.

TEACHING FACULTY—ATTENDING  
STAFF OF COOK COUNTY HOSPITAL

Address:

Registrar, 427 South Honore St., Chicago, Illinois

## PROFESSIONAL PROTECTION



### A DOCTOR SAYS:

"Your prompt response from the first and evident concern for the protection of our professional reputations as well as our financial interests to the successful termination of the case relieved us of all worry."

THE  
**MEDICAL PROTECTIVE COMPANY**  
OF  
FORT WAYNE, INDIANA

Markle Foundation to support his studies of "the significance of the excretion of various porphyrins."

To Dr. Arthur T. Henrici, professor of bacteriology and president of the American Bacteriological Association, the National Tuberculosis Association has granted \$500 for a study of the relation of acid-fast actinomycetes to tuberculosis.

\*\*\*

Institutes on premature and newborn infant care were conducted in eight Nebraska cities for physicians and nurses last month by Dr. A. V. Stoesser, associate professor of pediatrics at the University of Minnesota Medical School, and Miss Gertrude Carlsrud, nursing instructor in premature infant care, Minnesota State Department of Health.

The institutes, held from June 12-28, were presented under the auspices of the Nebraska Medical Association, the Nebraska Nurses Association, the Nebraska League of Nursing Education and the Nebraska State Department of Health.

\*\*\*

Just released from publishers are two new children's books by Camilla Wing, wife of Dr. D. H. Bessen of Minneapolis. The books, "The Shiny Scoop" and "The String Bean Horse," as explained by Dr. E. J. Huenekens, clinical professor of pediatrics at the University of Minnesota, in the foreword, "make the interesting attempt to solve the problem of poor appetite by educating the child to the value of the various foods and encouraging him to demand proper foods instead of having them forced on him." The little boy in the stories is "Dannie," and his little friends include Vitamin, Fat, Carbohydrate, Protein and Mineral.

\*\*\*

A scroll for distinguished service was presented to Dr. and Mrs. Horace Newhart of Minneapolis at the Central Zone Conference for the Hard of Hearing.

The award was made at the conference banquet June 28, by Jerry Mihm of Saint Louis, vice president of the Central Zone, who presided at the dinner.

Dr. Newhart is director of the Division of Otolaryngology at the University of Minnesota Medical School, and a member of the society's board of directors. He twice served as president of the national association. Dr. and Mrs. Newhart were among the founders of the Minneapolis society, and Mrs. Newhart has served as its president.

\*\*\*

Dr. Chester A. Stewart of Minneapolis, who left June 21 for New Orleans to become head of the pediatrics department of the Louisiana State University Medical School, was honored at several parties.

On May 28, members of the Northwest Pediatrics Society entertained at the University Club in Saint Paul and presented Dr. Stewart with a traveling bag.

His associates at the University of Minnesota pediatrics out-patient department entertained at the Campus Club in the Coffman Memorial Union, June 6. Dr. Stewart was presented with a gift.

On June 7, Dr. and Mrs. C. A. McKinlay of Min-

MINNESOTA MEDICINE

# OF GENERAL INTEREST

neapolis entertained at an open house for Dr. and Mrs. Stewart.

\* \* \*

Dr. R. R. Hendrickson, who has headed the Buena Vista Sanatorium in Wabasha for the past year and a half, has resigned that position to accept a post as superintendent and medical director of the Sand Beach Sanatorium at Lake Park near Detroit Lakes. He will take up his new duties within the next month or two.

Before coming to Wabasha, Dr. Hendrickson was chief medical officer at the Saint Cloud reformatory and prior to that was superintendent at Fair Oaks Lodge Sanatorium, Wadena.

Dr. Hendrickson succeeds Dr. R. H. Flancher as superintendent of the Sand Beach Sanatorium, the latter having resigned recently.

\* \* \*

Awards for outstanding scientific exhibits at the American Medical Association meeting in Cleveland were presented several Minnesota men.

The bronze medal for third place was given to Drs. Walter M. Boothby, W. R. Lovelace, C. W. Mayo and A. H. Bulbulian of Rochester for their exhibit on developments in aviation medicine, particularly research on the effects of oxygen want at high altitudes and the design of a rubber face mask to supply oxygen to military pilots.

In another group of awards made for excellence of presentation of medical work rather than original research, the gold medal went to Dr. Waltman Walters, Dr. Howard K. Gray and Dr. James T. Priestly of Rochester.

Among those receiving honorable mention were Dr. Thomas H. Seldon and Dr. John S. Lundy of Rochester.

Dr. H. S. Diehl, dean of medical sciences at the University of Minnesota, served as one of the judges of the scientific exhibits.

\* \* \*

The most extensive scientific exhibit ever presented at an annual meeting of the Minnesota State Medical Association, was seen at the 1941 state session held in Saint Paul in May. Judges were hard put to confer honors fairly among the large number of uniformly excellent displays.

Winners of the Southern Minnesota Medical Association for the best scientific exhibit were F. T. Becker of Duluth and R. H. Puumala of Cloquet for their exhibit on Milker's Nodules. Special mention went to J. R. Sturre, Minneapolis, for his color photographs of gross specimens; F. C. Schuldt, Saint Paul, for his Introduction to Mendelian Law and Genetics; H. O. McPheeters and Harvey Nelson, Minneapolis, for their presentation of skin grafting; A. Louis Dippel and Emil G. Holmstrom for their Visualization of Placenta by Soft Tissue Roentgenography, University of Minnesota; F. E. Burch, Saint Paul, and Arthur H. Downing for their presentation of Malignant Melanomas of the Eye, University of Minnesota; R. K. Ghormley, E. F. Rosenberg and P. S. Hench of Roches-

JULY, 1941

# TASTE!

**GLENWOOD  
INGLEWOOD  
NATURAL\* OR DISTILLED  
SPRING WATER**

*for home and office*

**GENEVA 4351**

*\*Naturally Mineralized, Naturally Healthful*



86c out of each \$1.00 gross income  
used for members benefit

**PHYSICIANS CASUALTY ASSOCIATION  
PHYSICIANS HEALTH ASSOCIATION**



Hospital, Accident, Sickness

## INSURANCE



For ethical practitioners exclusively  
(56,000 Policies in Force)

<b>LIBERAL HOSPITAL EXPENSE COVERAGE</b>	For \$10.00 per year
<b>\$5,000.00 ACCIDENTAL DEATH</b>	For
\$25.00 weekly indemnity, accident and sickness	\$32.00 per year
<b>\$10,000.00 ACCIDENTAL DEATH</b>	For
\$50.00 weekly indemnity, accident and sickness	\$64.00 per year
<b>\$15,000.00 ACCIDENTAL DEATH</b>	For
\$75.00 weekly indemnity, accident and sickness	\$96.00 per year

39 years under the same management

**\$2,000,000.00 INVESTED ASSETS**

**\$10,000,000.00 PAID FOR CLAIMS**

\$200,000 deposited with State of Nebraska for protection of our members.

Disability need not be incurred in line of duty—benefits from the beginning day of disability.

Send for applications, Doctor, to

400 First National Bank Building Omaha, Nebraska



A  
**NEW IDEA**  
for only  
**\$29.95**

Here is ideal heat relief at low cost. Kisco CIRCULAIR units employ an entirely new principle of cooling by keeping all the air in a room constantly recirculating. An ordinary fan only pushes a blast of air forward in one direction, but the CIRCULAIR lifts the cooler, low air up from the floor and distributes it in all directions at the same time throughout the room. There are no blasts or drafts to create discomfort, muss hair, or disturb papers and light objects. Be prepared for hot weather; ask our salesman for a demonstration.

*Illustrated, the LO-AIR, splendid for home or reception room. Finished in black and chrome.*

**BROWN & DAY, Inc.**

62-64 East 5th Street

St. Paul, Minn.

## Effective, Convenient and Economical

**THE** effectiveness of Mercurochrome has been demonstrated by twenty years' extensive clinical use.

For the convenience of physicians Mercurochrome is supplied in four forms—Aqueous Solution for the treatment of wounds, Surgical Solution for preoperative skin disinfection, Tablets and Powder from which solutions of any desired concentration may readily be prepared.

*Mercurochrome, H.W.&D.*  
(dibrom-oxymercuri-fluorescein-sodium)

is economical because solutions may be dispensed at low cost. Stock solutions keep indefinitely.



Mercurochrome is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

*Literature furnished on request*

**HYNSON, WESTCOTT & DUNNING, INC.**  
BALTIMORE, MARYLAND

ter for their showing of Types of Pathology of Rheumatic Diseases, Mayo Foundation of Medical Education and Research; Kano Ikeda for his exhibit on Lipoid Pneumonia, Charles T. Miller Hospital.

\* \* \*

A recommendation that medical schools with adequate facilities increase their freshman class enrollment by 10 per cent in order to meet the increased demand for doctors resulting from the defense program, was voted at a recent meeting of the executive council of the Association of American Medical Colleges of which Dr. H. S. Diehl of the University of Minnesota is a member.

The council also recommended that in order to accelerate the output of medical schools, provision be made for part of the senior medical class to attend school during the summer months.

Both of these recommendations were in effect at the University of Minnesota, before the council meeting. It was voted some time ago to increase admissions to the medical school to 125 students—about 10 per cent more than have been admitted in previous years. For several years now, three-fourths of the senior class have attended school in the summer.

Ways by which the medical course, as a whole, can be accelerated without lowering standards, are being considered and will be discussed by the council next fall.

\* \* \*

Medical Reserve Corps Officers ordered to extended active duty within the past few weeks include:

Dr. Carl John Fritsche of New Ulm, first lieutenant, to Corps Area Service Command Replacement Center Infirmary, Fort Riley, Kansas.

Dr. Robert Sisson Leighton of Evansville, first lieutenant, to Corps Area Service Command Station Hospital, Fort F. E. Warren, Wyoming.

Dr. Wallace Martin Meyer of Rollingstone, first lieutenant, to 30th Field Artillery, Camp Roberts, California.

Dr. Harry Bryan Neel of Albert Lea, first lieutenant, to Corps Area Service Command Station Hospital at Fort Leonard Wood, Missouri.

Dr. Donald Herbert Peterson of Saint Paul, first lieutenant, to Corps Area Service Command Induction Station, Fort Des Moines, Iowa.

Dr. Alvan Sach-Rowitz of Moose Lake, major, 40th Field Artillery, Camp Roberts, California.

Dr. Bernard Street of Saint Cloud, first lieutenant, to Corps Area Service Command Induction Station, Des Moines, Iowa.

Dr. Walter Subby of Hibbing, first lieutenant, Corps Area Service Command Reception Center, Fort Snelling, Minnesota.

Dr. William John Watson of Holdingford, first lieutenant, to Corps Area Service Command Replacement Center Infirmary, Fort Riley, Kansas.

Dr. Richard Henry Barrett of Rochester, first lieutenant.

Dr. Samuel Alan Challman of Minneapolis, captain.

Dr. Christopher John McLoughlin of Rochester, first lieutenant.

Dr. Adolf Dysterheft of Gaylord, captain, to Cavalry Replacement Center Infirmary at Fort Riley, Kansas.

Dr. Joseph Samuel Emond of Farmington, captain, to 155th Station Hospital, Camp Roberts, California.

Dr. Erling Trygve Hauge of Minneapolis, first lieutenant, to 1st Cavalry Division, Fort Bliss, Texas.

Dr. Harold William Havel of Jordan, first lieutenant, to Field Artillery, 2nd Cavalry Division, Fort Riley, Kansas.

Dr. Cleon Richard Holland of Minneapolis, first lieutenant, to Corps Area Service Command Cavalry Replacement Center Infirmary at Fort Riley, Kansas.

Dr. Robert Davis Mooney of Saint Paul, first lieutenant, to Corps Area Service Station Hospital at Fort Leonard Wood, Missouri.

Dr. Donald Richard Reader of Fergus Falls, first lieutenant, to Corps Area Service Command Induction Station at Fort Snelling, Minnesota.

Dr. Charles Wesley Rogers of Heron Lake, first lieutenant, to Corps Area Service Command Engineer Replacement Center Infirmary, Fort Leonard Wood, Missouri.

Dr. George A. Williamson, Saint Paul, major, to Camp Haan, California.

MINNESOTA MEDICINE